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ABSTRACT

At irregular intervals, beginning in 1977, Swedish-Finnish conferences on contrastive and applied linguistics have been arranged in Stockholm and Turko/Abo. This volume presents most of the papers given at the 1982 conference. Papers include: "Free Recall of Mixed Language Lists. Error Patterns in Bilingual Memory" (Karin Aronsson, Anja Metsola, Fero Norrbacka, Kaisa Tervonen); "Some Psycholinguistic Considerations towards a Theory of Second Language Processing" (Hans W. Dechert); "Errors in Lexical Processing" (Hannele Heikkinen); "Data Types and Second Language Variability" (Kenneth Hyltenstam); "On the Acquisition of Vocabulary in Immigrant Swedish" (Ulla-Britt Kotsinas); "Acceptability and Ambiguity in Native and Second Language Message Processing" (Jaakko Lehtonen, Kari Sajavaara); "Psycholinguistics and Language Learning: Some Reservations" (Paul Meara); "Developmental Changes in Visual and Auditory Interference Patterns for Bilingual High School Students" (Edith Magiste); "On the Use of Lexical Avoidance Strategies in Foreign-Language Communication" (Rolf Palmberg); "A Psycholinguistic Approach to a Pedagogic Grammar" (Geoffrey Phillips); "On the Distinctions of Item Learning vs. System Learning and Receptive Competence vs. Productive Competence in Relation to the Role of L1 in Foreign Language Learning" (Hakan Ringbom); "Problems in 'Measuring' L2-Learning Strategies" (Kaj Sjoholm); "Deception and Dissociation Markers as Indicators of Communication Strategies" (Astrid Stedje); "Expecting the Discourse Topic in Native and Foreign Language Text Comprehension" (Jorma Tommola); and "Foreign Language Vocabulary Learning--a Criterion of Learning Achievement" (Peter af Trampe). (MSE)

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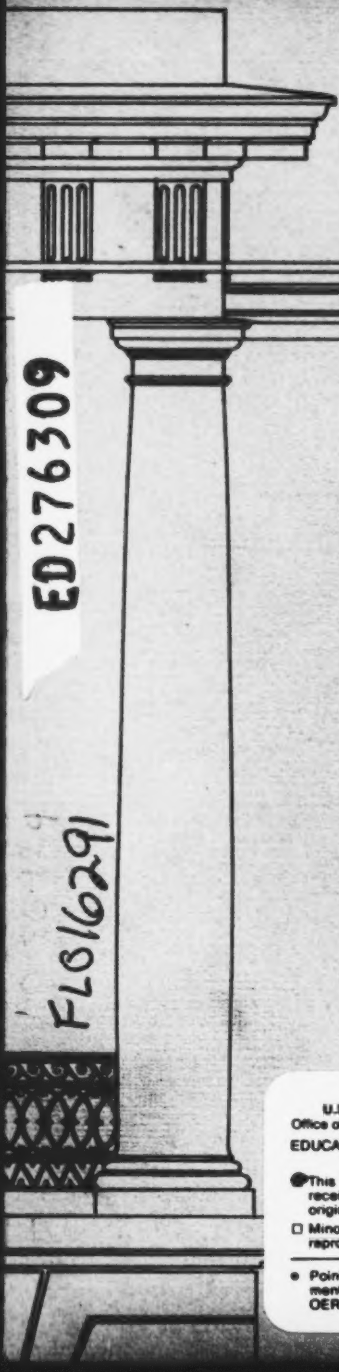

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FORSKNINGSINSTITUT NR 86

Psycholinguistics and foreign language learning

Edited by

HÅKAN RINGBOM

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FORSKNINGSINSTITUT

Psycholinguistics and foreign language learning

Papers from a conference held in Stockholm and Åbo
October 25-26, 1982

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HÅKAN RINGBOM

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PREFACE

At irregular intervals, beginning in 1977, Swedish-Finnish conferences on contrastive and applied linguistics have been arranged in Stockholm and Turku/Åbo.

The theme of the conference in October 1982 was Psycholinguistics and Second/Foreign Language Learning, and twenty-one scholars from four countries were invited. This volume presents most of the papers given at the conference.

The conference was made possible by a grant from the Research Institute of the Åbo Akademi Foundation, for which I would like to express my sincere thanks. I would also like to thank the Research Institute for including this volume in its series.

Papers by the following were also read at the conference, but were not submitted for publication:

Nils Erik Enkvist
Björn Hammarberg
Moira Linnarud
Sven Strömkvist
Åke Viberg

Åbo, June 1983

Håkan Ringbom

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FREE RECALL OF MIXED LANGUAGE LISTS. ERROR PATTERNS IN BILINGUAL MEMORY

The present work is an exploratory investigation of lexical interference in the recall of nonbalanced bilinguals. Basic research on bilingualism often employs so called balanced bilinguals; speakers with equal mastery of two languages. These bilinguals are often defined in terms of high or superior mastery of both languages. Yet, a very large percentage of real-life bilinguals are nonbalanced bilinguals. This especially holds true in Europe today where a great number of immigrant workers have to interact in their weaker, nondominant language. Naturally, language dominance is a complicated issue, changing dynamically through a person's life time and also with the types of communication situations concerned. However, for the immigrant worker, nativelike mastery of the second language is but seldom achieved, and in this general respect, the second language can be defined as the weaker one.

Problems of balance and imbalance concern the bilingual speaker directly, also on a subject level. Many superficially fluent bilinguals report more or less pronounced suffering from "language loss", language mixing and problems in retrieving words. These practical problems are closely linked to basic issues in models of bilingual memory, most generally stated to the basic problem of independence or interdependence of first and second language processing. Research on bilingual information processing has convincingly demonstrated interference in the speed and effort associated with bilingual performance, when compared to monolingual performance. Processing time increases when the two languages are simultaneosly activated (Dornic, 1979; Gutiérrez Marsh & Hipple Maki, 1976; Macnamara & Kushnir, 1971). Also, perceived effort has been shown to be greater among subjects in bilingual than monolingual conditions, even when there are no differences in performance for the two types of conditions (Dornic, 1980). Furthermore, the Dornic study validated subjects' experiences of greater effort in that their performance on a subsidiary task was inferior in the bilingual than in the monolingual condition. Thus, subjects may perform with unimpaired accuracy when they have to simultaneously activate two languages, but at the cost of less spare capacity for other tasks.

Evidently, bilingualism entails a certain price in terms of energy expenditure and loss of speed in verbal processing (cf. Dornic, 1979; Mägiste, 1979a). The cited findings indicate that the two language systems are somehow connected, functionally and/or through common storage. Results on bilingual recall also support this hypothesis. Various studies have indicated interference in bilingual retrieval of words. For one thing, there are transfer effects when subjects learn lists containing translation equivalents of previously rehearsed material (Young & Saegert, 1966; Young & Webber, 1967; Saegert, Kazarian & Young, 1973). Kintsch and Kintsch (1969) have demonstrated slower learning in paired associate learning. Also, Kintsch (1970) found interference in recognition (false recognitions of translation equivalents of the target words). As can be expected, research on mixed language recall (with stimulus words in both languages) shows that subjects more easily remember material from unilingual than bilingual lists, and more easily from bilingual than trilingual lists (Tulving & Colotla, 1970).

In mixed language tasks, subjects generally recall the target words in the appropriate language, and not its translation equivalent (cf, Lambert, Ignatow & Krauthamer, 1968; MacLeod, 1976; Nott & Lambert, 1968; Rose & Carroll, 1974). However, most investigations report occasional translation errors. An inspection of the reported data reveal that these constitute between 1 and 21 % of the number of concept recalls, but typically less than 12 %. Previous work indicates that interference increases as the material becomes more meaningful. First, we find no translation errors in primary memory tasks since these are not conducive to word classification (cf. Kintsch & Kintsch, 1969). Also, memory tasks which employ unrelated sets of words (non-category lists) do not result in translation errors. In contrast, subjects tend to produce translation errors in category tasks (cf. Lambert, Ignatow & Krauthamer, 1968; Nott & Lambert, 1968). It is worth noticing that interference increases with more meaningful material. This tendency may in fact indicate that laboratory studies underestimate interference in real-life situations (at least in select situations which demand the simultaneous activation of both languages).

Interference and individual differences. Scientific confusion about bilingual confusion

As shown, various results indicate that interference is not a mere epiphenomenon but something that really affects the bilingual speaker (greater perceived effort, lesser speed and spare capacity, interlingual confusion etc). However, we cannot assume that bilingual individuals are uniformly affected. Obviously, language habits, prior acquisition history, and other factors may play a role. If there are such individual differences, they would also have educational and other societal implications (e.g. for optimal construction of bilingual curriculae, for timing of second language introduction etc). For more than a decade, the Lambert group in Canada (Dil, 1972) explored the role of individual differences. Their hypothesis was that the acquisition history of the two languages exerts a considerable influence on the type of bilingual information processing. The basic notion in their research was that so called coordinate bilinguals are more capable of keeping their two languages apart than compound bilinguals are. Originally, compound bilingualism was merely associated with prior learning of the two languages in one single context (e.g. both languages spoken at home by both parents), whereas later, the Lambert group also defined compound bilingualism in terms of early bilingualism, shaped before the bilingual person's formal schooling. In contrast, coordinate bilinguals have been defined as those speakers who have learnt their two languages in two different contexts. According to the latest definition, they are also those bilinguals who have learnt the two languages at different times, L1 before the school début and L2 after school age.

The compound: coordinate distinction is rooted in an associationistic referential theory of language. It is foremost a semantic model of bilingualism. Yet, it does not handle important issues in semantics like polysemy or fuzzy concepts. Also, as can be seen in Dil (1972), the large body of quite ingenious experimentation has failed to reveal any consistent response differences between coordinate and compound bilinguals on various tasks (such as the free recall of mixed language lists, semantic differentials for the same concepts in the two languages, reaction time measures, and semantic satiation, etc).

The compound: coordinate model has been criticized on several different occasions (e.g. Diller, 1970; Macnamara, 1972). It is now more or less an obsolete construct. However, we still have to handle interindividual differences between individuals with respect to bilingual information processing. Recently, several researchers have increasingly used the distinction between balanced and nonbalanced bilingualism in a fashion, which is somewhat similar to the old conceptualization of coordinate: compound bilingualism. Regrettably, the distinction between balanced and nonbalanced bilingualism is almost as illdefined as its disreputable predecessor.

Theoretically, the notion of balanced bilingualism as such is quite dubious; language skills are not unidimensional, and we may thus find balance and imbalance in the same subject. A bilingual speaker may be "balanced" with respect to phonology but not with respect to syntax. Also, somebody may be quite fluent in certain language domains but not in others, depending on whether he has had extensive contact in one or both languages in the domains of church, school, home, etc (cf. diglossic situations).

In several investigations "balance" is defined not only in terms of equal mastery in two languages, but also in terms of fluency or excellency (e.g. Ben-Zeev, 1977; Mägiste, 1979b). Balanced bilingualism has thus become a composite concept of fluency/excellency on the one hand, and balance on the other. Equal mastery is typically defined by reaction time techniques, and fluency is assessed through self-ratings (e.g. Mägiste, 1979b).

Obviously, this type of classification system will yield various permutations of fluency x balance which are difficult to sort into a balance/nonbalance dichotomy in a reliable fashion. Symptomatically, several studies refer to balanced and nonbalanced bilinguals without any indication of how this problem has been settled. As things now stand, balanced bilingualism seems to be a confounded concept, which refers to fluency and/or balance.

The confused state of the art is reflected in the diverging results for balanced bilingualism on degree of interference, where some studies show more interference among "balanced" bilinguals (Nott & Lambert, 1968), while other studies reveal less interference among balanced bilinguals (Lambert, Ignatow & Krauthamer, 1968). The inconsistent results are not surprising, if we consider the composite character of the definition of "balance".

One determining factor behind some findings is probably degree of automaticity or overlearning, when the two languages are combined. Therefore, it seems important to inspect the combined pattern of L1 and L2 mastery. In the present investigation, combined mastery (fluency) will therefore be related to degree of lexical interference between the two language systems.

Interference and fluency

According to Weinreich (1968) and others, we should find more interference with less mastery. In free recall of mixed word lists, we may thus expect that low automaticity will also be associated with more interference. There are also experimental results which can be taken as support for this position. For instance, Goggin and Wickens (1971) compared degree of interference in a Low and a High group of bilinguals. The Low group was defined in terms of unequal degrees of fluency (low fluency in at least one of the two languages), whereas the High group was defined in terms of equal fluency in the two languages (self-ratings 4-6 on a 1-9 scale; i.e. fairly good fluency). The results showed that there is more interference with less mastery in that release from proactive interference was considerably lower among the Low than High group bilinguals (44% and 98%), which means that the fluent bilinguals were also much better at keeping their two languages apart.

The translation hypothesis and other explanations of functional independence (L1/L2)

In general, results which reveal bilingual interference have been interpreted as support for common storage (rather than separate storage of the two sets of lexical words, L1 and L2). The somewhat paradoxical fact that subjects most of the time are quite able to recall the language of presentation has generally been explained by positing the existence of language tags. These tags contain information about the input language, stored along with the target concepts (cf. Nott & Lambert, 1968; Lopez & Young, 1974; Saegert, Kazarian & Young, 1973).

An alternative model to the common storage model is one of separate storages. Of such models, the one which provides the most plausible explanation of some of the relevant findings is the "translation hypothesis" which has been formulated by Tulving and Colotla (1970). They maintain that there are two separate memories which interact through automatic translation from the weaker into the stronger language. If this model holds, we would mainly find translations in one direction (e.g. from L2 to L1).

Goggin and Wickens (1971) found more translation errors among their less fluent bilinguals and suggested that these results may be due to a tendency of nonfluent bilinguals to translate from the nonpreferred into the dominant language. As can be seen, this interpretation of the results can then be taken as support for the translation hypothesis of Tulving and Colotla (1970). In contrast, Lopez and Young (1974) found that positive transfer occurred both in the stronger to weaker, and in the weaker to stronger condition in a familiarization experiment; i.e. they did not find the differential facilitation that would have been predicted by the translation hypothesis. Macnamara and Kushnir (1971) conducted an experiment which required their subjects to switch between the two languages. They found that the subjects always needed more time when switching between languages than when performing in their weaker language. However, if subjects automatically translate from the weaker to the stronger language, they should *not* perform worse in the mixed than in the weaker language condition (since the translation is already done for them in the mixed condition). Thus, this study does not support the translation hypothesis. Of the research which we have briefly reviewed, the last two studies do not support the hypothesis, whereas the previous ones do (Goggin & Wickens, 1971; Tulving & Colotla, 1970). Thus, the issue is far from settled. There is no conclusive evidence pro or con the translation hypothesis. In the present state, we would clearly benefit from more data on automatic translations in bilingual subjects.

Kolers (1968) maintained that neither common storage nor separate storage can fully account for the research findings in the area. Similarly, Dornic (1979) has argued for some type of common storage but in combination with smaller language specific storage systems. If we temporarily accept this latter model, a corollary question pertains to the nature of the different storage systems. What are the semantic and other determiners of whether words will be stored in language specific and/or in unbound form?

Kolers (1968) reported results showing more interference for concrete terms (like TREE) than for abstract terms (like JUSTICE). His results make sense in that frequent nouns of a concrete type are probably used in more similar ways in the two languages (than more abstract nouns which should be more language bound). Rosch, in her model of basic level organization, maintains that certain words refer to a more basic level of abstraction than others; to a habitual level of abstraction. Thus, CAR is more basic than the subordinate SPORTS CAR and also more basic than the superordinate VEHICLE (Rosch et al, 1976). Analogously to Kolers' results for concrete versus abstract words, we could thus also expect more interference among basic level concepts in the bilingual's two languages (than among the subordinate/superordinate terms).

It was the goal of the present investigation to explore such intralingual factors behind lexical interference as well as interindividual determiners of interference (e.g. degree of fluency). In contrast to many other memory studies, we were therefore *primarily interested in the error patterns in their own* right. The study of the lexical interference requires a corpus of lexical intrusions. Accordingly, we chose instruments which might elicit confusion errors; more specifically mixed language lists of a category type. We chose category type lists, since these are known to elicit more confusion than non-category lists (Nott & Lambert, 1968). Also we deliberately recruited subjects that might differ in degree of automaticity/fluency; Finnish-born workers without grammar school education and students at the university (both groups composed of fluent speakers of their second language, Swedish, in *everyday* interaction).

Method

Subjects

The 44 volunteer subjects were bilingual adults of Finnish extraction (born in Finland and presently living in Sweden; all below 40 years of age). Twentythree subjects work with manual work in Olofström (LM or Volvo), whereas twentyone subjects are students in Lund. All subjects are fluently bilingual in everyday interaction and have at least six years of experience with Swedish; either through Swedish residence or through six years of Swedish as a school language in Finland combined with at least two years in Sweden. No Finland-Swedish persons or childhood bilinguals were allowed in the sample (which meant that 3 subjects were excluded from an original pool of 47 subjects).

Instruments

Three sets of 40 words were composed for the purpose of the present experiment. After listing sets of 40 words, half the words in each subset were randomly chosen to be translated from Finnish to Swedish. Subsets consisted of different semantic categories, e.g. list I, nouns, consisted of 20 furniture terms and 20 kinship and friendship terms. List II contained nouns referring to household utensils (10), food (10), spatial terms (10) and moral terms (10). List III contained two subsets of verbs; half of which were chosen for their emotional connotation (e.g. KISS, LOVE, HATE). Words were chosen which are fairly frequent, and the different subsets within each list were matched for word frequency. All 120 words were typed on cards.

Procedure

The lists were presented in order I-III. Words within each list were presented in random order, a different order for each subject. The words were presented at a 2-second rate. Each presentation was followed by a written recall test in which subjects were asked to recall as many words as possible. Prior to the first list, it was emphasized that even if subjects could not remember the language in which the word was presented they should still try to recall the word. Also they were instructed not to bother to repair their lists, just to write down the first word that they could recall, and as fast as possible. Two minutes were allowed as retrieval time for each test.

Results

Error analysis

The subjects produced a total number of 1 829 responses, including 1 604 lexical retrievals (correct concepts in the correct language), 153 language substitutions (translation errors; correct concepts), and 72 category intrusions. Subjects recalled about the same number of words in the correct language in both Finnish and Swedish; 806 lexical words in Finnish (L1), and 798 lexical words in Swedish (L2). In research with bilingual lists, it has been noted in different contexts that the number of correct recalls in each of the two languages does not indicate language dominance in any reliable way. In fact, subjects sometimes recall more words in their weaker language (e.g. MacLeod 1976; Nott & Lambert 1968; Tulving & Colotla, 1970). In the present investigation, there is in fact also a small L2 advantage if we take into account also the number of concepts which are recalled but in the wrong language. There are 93 such translation errors from Swedish to Finnish, but only 60 from Finnish to Swedish. If these errors are added to recall in the correct language (lexical recalls), subjects in fact recalled more words from the Swedish lists; 891 word concepts from the Swedish lists and 866 from the Finnish lists.

The lexical substitutions thus tend to follow the most typical pattern; i.e. translations from the weaker to the stronger language. In all, there are 153 substitutions, and the Swedish to Finnish advantage (93) over the Finnish to Swedish tendency (60) is statistically significant; binomial test, $z = 2.61$, $P < 0.005$. This tendency of more translations from the weaker to the stronger language thus extend the validity of earlier results showing a weak to strong direction in the translations.

There were 72 category intrusions, i.e. false "recalls" of words that had occurred neither in L1 nor in L2. The most common intrusion, 12 cases, was TABLE (Swedish BORD or Finnish PÖYTÄ) and the next common one, 4 cases, was LAMP (Swedish LAMPA or Finnish LAMPPU). Intrusion errors were of the same word class as other words in the target list. The category intrusions were quite evenly distributed among conditions, with no systematic relation to fluency or to type of word category.

If extended to more abstract nouns than those referred to by Rosch et al (1976), certain kinship terms like FATHER should be more basic than more specific terms like GRAND-FATHER (when literally considered as a type of father) and also more basic than general terms like MAN. List I (Table 1) contains basic and non-basic kinship terms, in this extended sense, as well as furniture terms which are in fact offered as illustrations for basic/non-basic terminology by Rosch et al; e.g. CHAIR versus EASY-CHAIR. An inspection of the response patterns revealed that "basic" terms were translated more often than their related terms, $P < 0.019$ (Table 2). Thus, degree of lexical interference is apparently related to level of abstraction in a predictable fashion.

Table 1. Number of substitutions in series I; concrete nouns: furniture and kinship terms.

Stimulus word and language of presentation; Swedish (Sw) or Finnish (Fi)		Number of spontaneous translations
Sw:	STOL^{6} [1] (chair)	8
Sw:	SOFFA^{15} (sofa)	5
Sw:	BÄNK^{7} (bench) BOKHYLLA^{22} (bookshelves)	4
Fi:	SOHVAPÖYTÄ^{7} (sofa table)	4
Sw:	MATBORD^{10} (dining table)	3
Fi:	MATTO^{17} (carpet) TAULU^{7} (picture)	3
Sw:	GUNGSTOL^{16} (rocking-chair)	2
	BORDSLAMPA^{15} (table-lamp)	2
Fi:	HYLLY^{15} (shelf)	2
Sw:	TAKLAMPA^{19} (ceiling-lamp)	1
	GARDINER^{18} (curtains) KUDDE^{13} (cushion)	1
Fi:	PALLI^{18} (stool) SÄNKY^{14} (bed)	0
	KAAPPI^{12} (cupboard) KIRJOITUSPÖYTÄ^{9}	0
	(writing-desk) PAPERIKORI^{7} (waste-paperbasket)	0
	NOJATUOLI^{11} (lounge chair)	0
Sw:	MOR^{16} (mother)	7
Fi:	ISOÄITI^{14} (grand-mother)	6
Fi:	ISÄ^{25} (father) APPI^{12} (father-in-law)	5
Sw:	FARFAR^{22} (grand-father $^{+\text{ paternal}}$)	3
Sw:	SVÄRMOR^{22} (mother-in-law)	2
Fi:	SULHANEN^{18} (fiancé) ENO^{18} (uncle $^{+\text{ maternal}}$)	2
Sw:	FASTER^{12} (aunt $^{+\text{ paternal}}$) VÄN^{11} (friend)	1
Fi:	TYTÄR^{15} (daughter) YSTÄVÄTÄR^{12} (friend $^{+\text{ female}}$)	1
Sw:	KUSIN^{22} (cousin) SVÄRDOTTER^{15} (daughter-in-law)	0
	MAKE^{15} (husband) KAMRAT^{8} (comrade) FARBROR^{7}	0
	(uncle $^{+\text{ paternal}}$)	0
Fi:	MORSIAN^{17} (fiancée) POIKA^{14} (son)	0
	VAIMO^{9} (wife)	

[1] The figures indicate number of lexical recalls

Table 2. Basic level and number of substitutions.

Word pair (basic level word to the left)	Is the basic level word translated more often?
MOR : ENO (mother : uncle $^{+\text{maternal}}$)	yes
MOR : ISOÄITI (mother : grandmother)	yes
MOR : SVÄRMOR (mother : mother-in-law)	yes
TYTÄR : SVÄRDOTTER (daughter : daughter-in-law)	yes
ISÄ : APPI (father : father-in-law)	no
ISÄ : FARFAR (father : grandfather $^{+\text{paternal}}$)	yes
ISÄ : FASTER (father : aunt $^{+\text{paternal}}$)	yes
ISÄ : FARBROR (father : uncle $^{+\text{paternal}}$)	yes
HYLLY[1] : BOKHYLLA (shelf : book-shelves)	(no)
STOL : NOJATUOLI (chair : easy-chair)	yes
STOL : GUNGSTOL (chair : rocking-chair)	yes
SOFFA : SOHVAPÖYTÄ (sofa : sofa-table)	yes

Binomial test; $N = 12$ $x = 2$ $P < .019$

[1] It is doubtful whether HYLLY should be considered as a basic level term. However, it is included as it works against the hypothesis.

List II contains four categories of words: spatial terms and terms referring to household utensils, food and moral. Categories were initially chosen as more or less concrete (Table 3). As shown – 8, 6, 9 and 11 substitutions per category – there is no differential error pattern. Similarly, in List III, there is no statistically significant difference between the number of translations between "neutral" and "affective" verbs; 17 versus 22 substitutions (Table 4). According to Kolers (1968), we could have expected a greater number of translations for verbs like KISS, LOVE. Yet, there is no such trend. However, the construction of the present list was fairly crude, and data of this type are most elusive.

Table 3. Number of spontaneous translations in response to series II; concrete nouns (household utensils, food), and abstract nouns.

Stimulus word and language of presentation; Swedish (Sw) or Finnish (Fi)		Number of spontaneous translations
Sw:	GAFFEL^{21}[1] (fork)	2
Fi:	LAUTANEN^{13} (plate)	2
Sw:	KNIV^{18} (knife) GLAS^{3} (glass)	1
Sw:	KANNA^{15} (pot) SKÅL^{8} (bowl)	0
Fi:	LUSIKKA^{17} (spoon) VAASI^{13} (vase)	0
	KATTILA^{9} (sauce-pan) KUPPI^{5} (cup)	0
Fi:	LIHAPULLAT^{13} (meat balls)	4
Sw:	KÖTTSOPPA^{16} (meat soup)	2
Fi:	HERNEKEITTO^{21} (pea soup)	2
Sw:	PANNKAKA^{16} (pancake)	1
Sw:	KÅLDOLMAR^{24} (stuffed cabbage rolls)	0
	PYTTIPANNA^{24} (fried diced meat and potatoes)	0
	POTATISMOS^{11} (mashed potatoes)	0
Fi:	VANUKAS^{15} (pudding) SILLISALAATTI^{7} (herringsallad)	0
	PUURO^{6} (porridge)	0
Sw:	CIRKEL^{12} (circle)	2
Fi:	LEVEYS^{18} (breadth)	2
Sw:	KVADRAT^{14} (square) TRIANGEL^{14} (triangle)	1
	AVSTÅND^{12} (distance)	1
Fi:	PITUUS^{19} (length)	1
Sw:	RIKTNING^{4} (direction)	0
Fi:	PAKSUUS^{11} (thickness) KOKO^{9} (size)	0
	SYVYYS^{19} (depth)	0
Sw:	RÄTT^{17} (right)	4
Sw:	GODHET^{12} (kindness)	3
Sw:	BROTT^{16} (crime)	1
Fi:	EPÄOIKEUDENMUKAISUUS^{34} (injustice)	1
Fi:	OIKEUDENMUKAISUUS^{29} (justice)	1
	RANGAISTUS^{14} (punishment)	1
Sw:	ANSVAR^{14} (responsibility) SNÄLLHET^{8} (goodness)	0
Fi:	VAPAUS^{10} (freedom) SYY^{8} (blame)	0

[1] The figures indicate number of lexical recalls

Table 4. Number of spontaneous translations in response to series III; verbs.

Stimulus word and language of presentation; Swedish (Sw) or Finnish (Fi)		Number of spontaneous translations
Sw:	SKRIVA^{4}[1] (write)	6
Sw:	TÄNKA^{11} (think)	4
Sw:	NÅ^{29} (reach) SPRINGA^{11} (run)	1
	RÄCKA^{8} (reach) HOPPA^{6} (jump)	1
Fi:	ISTUA^{15} (sit) NÄHDÄ^{12} (see) LAULAA^{8} (sing)	1
Sw:	ROPA^{12} (shout) ANDAS^{7} (breathe)	0
	LUKTA^{6} (smell) TÄCKA^{8} (cover)	0
Fi:	KUUNNELLA^{18} (listen) KUULLA^{31} (hear)	0
	LUKEA^{13} (read) MENNÄ^{10} (go)	0
	KATSOA^{6} (look) LÖYTÄÄ^{3} (find)	0
	KUULOSTAA (sound)	0
Sw:	SKRATTA^{10} (laugh)	6
Sw:	HATA^{17} (hate)	5
Fi:	ITKEÄ^{16} (cry)	4
Fi:	INHOTA^{19} (detest)	2
Fi:	RIIDELLÄ^{11} (quarrel)	2
Sw:	SMEKA^{14} (caress) SKÄMMAS^{13} (be ashamed)	1
	PITÄÄ^{8} (like)	1
Sw:	KYSSA^{27} (kiss) BESKYLLA^{14} (accuse)	0
	NJUTA^{10} (enjoy oneself) BEUNDRA^{11} (admire)	0
	MISSTÄNKA^{7} (suspect) SNYFTA^{3} (sob)	0
Fi:	RAKASTAA^{31} (love) KIROILLA^{9} (swear)	0
	KAIVATA^{8} (miss) KEHUA^{7} (brag)	0
	LOHDUTTAA^{7} (console) KADEHTIA^{5} (envy)	0

[1] The figures indicate number of lexical recalls

Interference and fluency

It was expected that subjects with lesser degrees of fluency should suffer from more lexical interference than subjects with greater fluency. Fluency was defined in terms of the pooled number of lexical words correctly recalled (counting both L1 and L2 recall). Thus, subjects were split into a high and a low fluency group: 22 subjects at or below 36 lexical words correctly recalled and 22 subjects at or above 37 lexical words, the total range being 14-64 words across all three lists. Semantic interference occurred among most subjects (91 %). Degree of interference was determined by the percentage of substitutions out of all words recalled (including translation errors). As expected, subjects in the Low group showed a significantly higher proportion of language substitutions (spontaneous translations) than the High group subjects; P < 0.001 (Table 5).

Table 5. Fluency and degree of lexical interference.

Fluency (lexical recall)		Mean percentage substitutions	N = 44
Low	(N = 22)	12.05	
High	(N = 22)	5.68	
Mann-Whitney U Test ; z = 3.27, one-tailed			P < .001

Thus, degree of lexical interference is greater among those subjects who are less fluent. One possible artifact behind the present results could be that the low performers recall as many concepts as the high performers but only do not retrieve the language tags. In order to check this explanation, total recall (including substitutions) was compared between the low and the high group. The results indicate that the high group performs best even when substitutions are taken into account (Table 6).

Logically, if we are to explain translation errors in terms of compensatory translations from a weaker to a stronger language, we should also find differences between lexical recall in Swedish and lexical recall in Finnish. Within each group, there are no significant differences of this type. The Low group recalls 313 words in L1 and 325 words in L2, while the High group recalls 493 words in L1 and 474 words in L2. Thus, it is difficult to explain the

Table 6. Fluency and total recall including substitions.

Fluency (lexical recall)		Level of total recall including substitutions Low	 High	N = 44
Low	(N = 22)	19	3	
High	(N = 22)	4	18	
χ^2 = 17.68		df = 1	$P < .001$	

present substitution patterns in terms of one way compensatory strategies. As previously indicated, subjects translate more often to L1 than to L2. However, this tendency is more pronounced in the High than in the Low group; 68% of all errors in the High group and 56% of all errors in the Low group.

Can the interference responses be explained as the results of habitual automatic translations from a weaker to a stronger language? If this explanation were valid, translations would work only in one direction; from L2 to L1. This was not the case in the present study. In fact, more than half of our subjects (52%) make translation in both directions, and only 23% conform exclusively to the "weak to strong" pattern; i.e. they produce translations only to L1. Moreover, quite a few subjects (16%) exhibit the reverse pattern; i.e. they only make translations from the stronger to the weaker language. The distribution of the three translation patterns is quite even among the High and the Low group. Obviously, the present results thus do not support the translation hypothesis of Tulving and Colotla.

Fluency, education and task demands

Subjects were deliberately recruited from divergent backgrounds with respect to education. We predicted that formal language habits (associated with more schooling) should result in greater fluency (i.e. greater accessibility to lexical words). A χ^2 -analysis of lexical recall and school background also showed this to be the case, $P < 0.001$ (Table 7).

Table 7. Fluency and formal schooling.

Fluency Level of lexical recall	Workers	Students	N = 44
Low (N = 22)	18	4	
High (N = 22)	5	17	
$\chi^2 = 12.92$	df = 1		$P < .001$

One of the background factors which defines the Low recall group is thus a lesser degree of formal schooling. For instance, as can be seen, 82 % of the Low group subjects are also workers. An inspection of the number of years spent in Sweden, shows that the median number of years in the Low group is seven years in Sweden, while the median of the High group is two years. On the other hand, the Low group has had less years of Swedish as a school language; a median time of three years as compared to eight years for the High group.

Conclusions

In the present investigation, we found meaningful connections between interference and word-category, on one hand, and between interference and fluency on the other. However, we did not include other measures of fluency than the number of correctly retrieved lexical words. Obviously, if we are to draw more firm conclusions about the relationship between bilingual fluency and interference, we would need more sophisticated measurements of fluency. Yet, the present results do indicate that it may be worthwhile to employ this type of measure. As can be seen, the bilingual performance is meaningfully related to degree of interference. We do not know if those subjects whose performance is most affected by language intrusions are also those who are most easily disturbed in real life situations. Other studies of bilingual recall have not checked this either. However, it seems quite plausible that we would find positive relations between degree of interference in our free recall situation, and subjects' vulnerability, with respect to language performance in stressful everyday situations.

In this investigation, we found differences between our two groups with respect to the relative number of translation but not with respect to recalls in L1 and L2. The present results thus extend previous findings which have shown that best recall in mixed word lists need not be indicative of which language is the dominant one. The error patterns seem to be more valid indicators of language dominance than the number of lexical words recalled. In the present case, we know that the subjects in general regard themselves as quite poor in Swedish according to self-reports (even though they speak Swedish with apparent fluency. This in turn implies that it is perhaps rather the degree of excellency in L1 which determines "balance", and not some kind of functional equilibrium between the two languages.

The present results support bilingual interdependence rather than independence. The experiment is not designed in such a way that it can be taken as unequivocal support for some specific type of storage system. As has been shown, the word lists yielded more translations from L2 to L1 than the other way round. However, when inspecting individual error patterns, we found that specific individuals often produced both types of errors. The individual error patterns did not show anything which could be taken as support for a unidirectional error pattern ("weak to strong translations"). Less than one fourth of the subjects conformed to the L2 —>L1 pattern, which we would have predicted from the translation model of Tulving and Colotla (1970). Thus, since the results do not validate the translation hypothesis of Tulving and Colotla, which is the most convincing independence model, they indirectly lend support to some type of interdependence system. This interdependence can then be realized through common storage and/or through some type of language switch which is continuously on. Both explanations can account for the mutual influence between the two language systems. As has been pointed out by Dornic (1979), interdependence can be structural or functional.

Also, there are intralingual factors which determine degree of interference. The present results indicate that basic level terms are more susceptible to lexical interference than related non-basic terms. This finding is quite suggestive for future work. It would be quite illuminating for the understanding of bilingual memory to further explore if these results hold if cross-validated with other language groups, and with other basic level terms.

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SOME PSYCHOLINGUISTIC CONSIDERATIONS TOWARDS A THEORY OF SECOND LANGUAGE PROCESSING

Introduction

The tentative phrasing of this paper's title (Some ... considerations ... towards) is intended to reflect the tentative state of the art; but also that our data and the analysis of these data exemplify no more than first insights, considerations of a highly speculative nature which we have come to just recently. If these considerations should prove to be substantial, they should have some significance for a new theory of second language acquisition, a psycholinguistic one.

This paper attempts to demonstrate that natural speech in general, because of the limited capacity of the human information processing system, is error-ridden in many ways; and that errors as indications of general processing problems for this reason are not necessarily restricted to second language generation in particular.

Any future theory of second language processing, we feel, should take in consideration this fundamental principle.

Task analysis

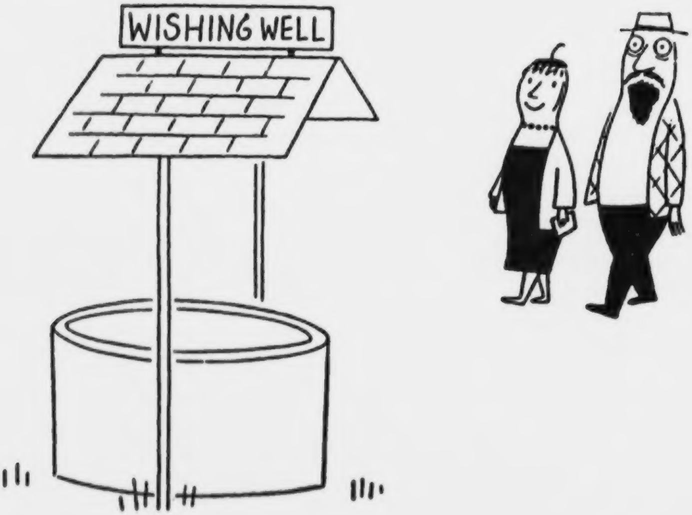
The cartoon (cf p. 32f.), taken from Goldman-Eisler (1961), which was used to elicit the following first and second language speech data resembles what we might call a minimal narrative (cf. Labov & Waletzky 1967; Pier 1980): Each of the three episodes has an elementary story grammatical function:

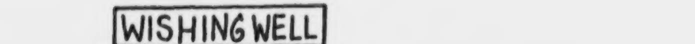
episode 1 represents the introduction or exposition of the story
episode 2 the complication and
episode 3 the resolution.
Episode 1 (in Propp's terms) exposes an arrival, *episode 2* an action at the location arrived at and *episode 3* a departure after the action has taken place.

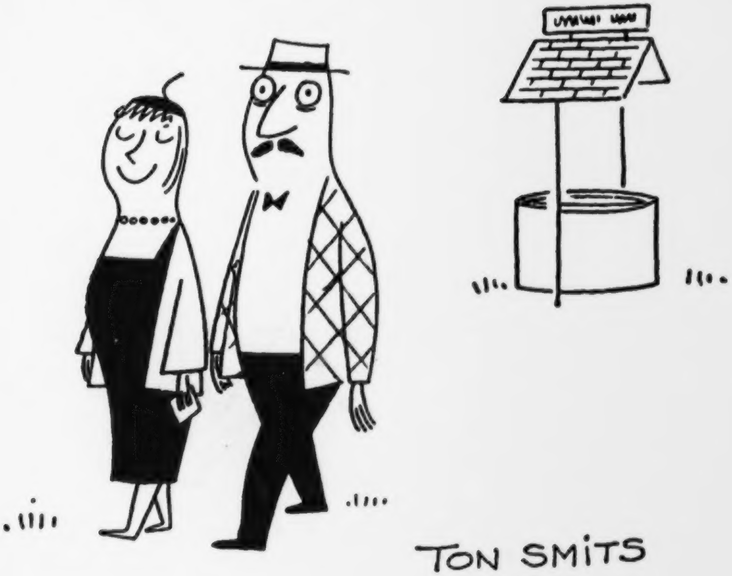
In *episode 1* the location of the action, the setting, the characters of the action, the man (the antagonist) and the woman (the protagonist), the major prop: the beard and the minor prop: the purse with the coin in it are introduced. The wishing-well script is additionally evoked by the inscription on top of the well. In *episode 2* the action leading to the complication is initiated: the coin is thrown into the well, the participation of the two characters and their role in the story (protagonist vs. antagonist) is partly signalled by their positions and facial expressions: the man, who does not know what is going on, takes over a passive role (antagonist); the woman, who is the active part, initiates the action. She is the protagonist. The *third episode* clearly discloses the result of the complication in episode 2. The woman has wished that her husband should lose his beard. This is the resolution. Only the moustache is left. The couple departs.

In order to solve this task one must know, of course, what a wishing well is and what it does. There are lots of wishing wells in England and in the United States, and in Italy, if I am not mistaken. There are practically none in Germany. Perhaps we are too acquisitive! There is no word for wishing well, either. I wonder whether our concept of wishing well is as clear as it is for a native speaker of English. If this was true the lack or indistinctness of a wishing-well script for a German speaker of English might cause some processing problems.

What's the message of the story? Is it a love story? Is the well a place to regain youth – the moustache – and get rid of old age – the beard. Are the man and the woman in the end rejuvenated because of her sacrifice of the coin and her never ending desire? – Or is it a women's-lib-story? Does she take over the role of hero traditionally belonging to him and rob him of the attribute of manhood, the beard, just leaving a little, tiny reminder of what he used to be, the moustache? Whatever this message may be, it certainly is part of the processing problem the narrator has to deal with even if he isn't aware of it.


WISHING WELL


WISHING WELL



Version 1

1.1.1 **TWO PEOPLE (0.3) A WOMAN AND A MAN (0.25) CAME TO A WELL (0.88)/**
1.1.2 **AND SUDDENLY STOPPED um (0.85) //**

1.2.1 **ABOVE (0.35) THE WELL was a (0.5) THERE (0.35) ONE COULD READ WISHING 'WELL (0.75) //**

1.3.1 **SUDDENLY THE WOMAN (0.42) TOOK A COIN A:ND uh (0.8) THREW IT IN THE WELL (2.14) //**

1.4.1 **THEN (0.72) THEY (0.52) WENT OFF //**

Key to Symbols

(2.66)	Pause (2 $\frac{66}{100}$ sec)
uh	Filled Pause
THE WELL	Capital Letters: Intended Ideal Version
the	Small Letters: False Start, Parenthetical Remark etc.
	Unit Boundary Lines:
/	Rise – Fall
	Intonation Contour + Pause: Episodic Unit
	Fall – Rise
//	Falling Intonation Contour + Pause: Episode

Version 1, the shortest one of the four, makes up a nice little story. Passages of short phrase length are followed by short pauses. The story is planned and processed bit by bit. Consequently there are, with one exception, no self-corrections. In addition to the three episodes of the cartoon, a fourth episode is introduced. It deals with the main topic. The subject seems to realize that the inscription 'Wishing Well' gives the cue to the comprehension and reproduction of the story. However, his/her pronunciation with the main stress on Well clearly shows that he/she has not understood the story completely and therefore does not notice or avoids mentioning what happens to the beard.

In line 1.2.1. the false start *was a* together with the hesitations apparently reveals a lexical search problem. Quite in accordance with the narrative intention for this episode, the subject wants to talk about the sign bearing the inscription. When he/she realizes that he/she has no command of the particular expression sought, he/she quickly chooses a linguistic alternative. As soon as the lexical search fails, a different processor replaces the lexical processor. An avoidance strategy successfully solves the problem resulting from the inaccessibility of a particular word for a particular concept. This is done in a remarkably short period of pausing time.

Version 2

2.1.1 A MAN AND A WOMAN CAME ALONG THEIR WAY (0.4) /
2.1.2 SUDDENLY THEY CAME TO A WISHING WELL (1.4) //

2.2.1 THE MAN HAD A (0.66) LONG BEARD (1.25) //

2.3.1 THEY STOPPED by: AT THE WISHING WELL (0.45) A:ND THE LADY (0.92) THREW (0.15) A COIN IN THE WELL (1.1) //

2.4.1 after (0.27) thro AFTER (0.55) THROWING the cor THE COIN IN THE WELL (1.15) THEY CONTINUED THEIR (0.26) WAY (3.55) //

2.5.1 now we can see on the picture afterwards (1.64) AFTER SOME TIME (1.38) THE BEARD OF THE MAN HAD DISAPPEARED //

This version shows longer, more fluent passages. They are partly identical with sentences (2.1.1 ; 2.1.2 ; etc.), and partly shorter than grammatical sentences. On the average the interruptions or hesitations within sentence boundaries are comparatively short, though. Two independent statements are added to the cartoon's original three episodes; namely in line 2.2.1

THE MAN HAD A LONG BEARD . . .

(before the wish was contrived) and in line 2.5.1

AFTER SOME TIME THE BEARD OF THE MAN HAD DISAPPEARED.

Contrary to version 1 this subject has understood the message completely and makes it clear, without explaining the cause of the disappearance of the beard. Besides minor collocation difficulties that might reflect L1-interference, there is one major disruption in the flow of speech:

2.4.1 after (0.27) thro AFTER (0.55) THROWING the cor THE COIN

There seems to be a procedural uncertainty in the gradual activation of the participle construction processor after . . . thro AFTER . . . THROWING

which results in the self-corrected word-level blend

after . . . thro AFTER . . . TH R O WING
cor
THE COIN

which is an indication of an undue amount of processing load and loss of peripheral control because of the complexity of the job.

In line 2.5.1 the parenthetical remark *now we see on the picture afterwards,* interrupting the flow of narration, creates a planning problem. The narrator who is about to report the unexpected effect of the lady's wish and therefore the realization of the wishing-well-script, in order to do so and present the resolution of the story, must take over the narrator's perspective again and connect the action before the interruption (line 2.4.1) with the following action (2.5.1) with the help of a connector in the story dimension. His/her decision for *AFTER SOME TIME* in place of *afterwards* sounds rather weird. This complicated operation, altogether, causes only a minor disruption.

Version 3

3.1.1 A MAN AND A WOMAN ARE WALKING UP TO A WISHING WELL (1.0)//

3.2.1 A::N (2.5) THE WOMAN IS SMILING (0.26) /
3.2.2 BUT they (1.64) THE MAN IS NOT SMILING (0.62) /
3.2.3 PERHAPS HE KNOWS THAT THE WOMAN IS GOING TO: (1.80) um (0.36) ASK HER SOME MONEY TO PUT IN THE WISHING WELL (5.0) //

3.3.1 THE WOMAN (0.62) HAS GOT THE they MONEY (0.76) /
3.3.2 AND SHE IS THROWING IT INTO THE WISHING WELL (0.96) /
3.3.3 THE MAN DOESN'T LOOK VERY INTERESTED (3.18) //

3.4.1 A::N (6.67) THEY ARE NOW WALKING AWAY FROM THE WELL (1.14) /
3.4.2 THE WOMAN IS SMILING (2.86) /
3.4.3 A::N (2.98) AGAIN THE MAN (1.98) ISN'T SMILING (12.18) /
3.4.4 A:ND IN THIS PICTURE THE MAN (0.46) IS NOT WEARING A BEARD (0.66) //

3.5.1 SO THE WOMAN (0.72) MUST HAVE WISHED (1.36) a::n THAT HIS BEARD WOULD DISAPPEAR (0.7) //

3.6.1 THE MAN DOESN'T LOOK VERY HAPPY ABOUT THIS //

Version 3, the longest of the four. has a number of lengthy uninterrupted, well-constructed stretches of speech (3.1.1; 3.3.2; 3.3.3; etc). There are other passages which are less smooth (3.4.3; 3.4.4; 3.5.1). The pauses in this version are considerably longer than those in any other production. Some of them are extremely long (line 3.4.3: 12. 18 sec.). Prolongations are effectively used to gain additional time for careful planning. Consequently there are no indications of repairs and self-corrections. This subject observes carefully every available source of information, including facial expressions and other reactions of the characters in the cartoon. He/she is the only one in the group who explains the joke (3.5.1).

Two passages in the story are of particular interest:

In line 3.2.3 he/she obviously intends to say "Perhaps he knows that the woman is going to ask him for some money to put in the wishing well." This explanatory remark (*Perhaps he knows*) is inferred from the husband's facial expression in the picture which is explicitly stated

THE MAN IS NOT SMILING

The conclusion drawn through this inference, however, does not correspond with the information given in the cartoon. There is no indication whatsoever that the lady, who is carrying a purse with her, wants her husband to give her the money. This is the subject's own invention. General knowledge-of-the-world leading out of the immediate context suggested by the picture is introduced: the money-claiming-wife script. As we have found with quite a few of our productions this kind of verbalisation task comes close to a projective test and induces a particular dimension of processing problems. The obvious planning problem in line 3.4.2, revealed by the pauses, the filled pause *um* and the drawl *TO*: as well as the false referential choice

ASK *HER* (for) SOME MONEY

instead of *ask him for some money* results from the competition of two plans. This competition right at this spot is due to a competition and final collision of two underlying scripts: the wishing-well script and the money-claiming-wife script. In this connection the wrong referential choice is by no means a random one but rather the consequence of a blend on the sentence level

The	woman	is	going	to	ask		him	(for)	some	money.
The	woman	is	going	to	ask	(for)	her			money.

THE WOMAN IS GOING TO ASK HER SOME MONEY

According to Fay (1981. 719) such "a blend occurs when a speaker has in mind simultaneously two ways of expressing the same message. Instead of one or the other expression being used, they are combined in some way to give a new, synthesized utterance that does not match exactly either of the intended expressions." I wonder whether in the particular case above – and in other cases we have found – it is really the same message that is expressed in two different ways. It seems to me rather that the message itself is ambiguous because of a higher-level processing ambiguity. Unfortunately we do not know much about blends in general (cf. Mackay 1972; Garrett 1980; Fay 1981), and in second-language production in particular. Neither do we know anything about the potential influence of L1 as a particular condition for the occurrence of particular blends. They are a strong case for the competition of speech planning.

A second interesting example for competitive planning is found in line 3.2.2

BUT they (1.64) THE MAN . .

The false start *they* represents a reference to the beginning line 3.1.1 A MAN AND A WOMAN . . .
although in line 3.2.1, i.e. immediately before the quoted utterance in line 3.2.1 THE WOMAN has already been mentioned in isolation. The attribution of the function of protagonist to the woman

THE WOMAN IS SMILING

is finished; the attribution of the function of antagonist to the man

THE MAN IS NOT SMILING

is under way. Both attributions have the important narrative function of delineating the complication of the story and preparing its resolution. And yet the original referent including both

A MAN AND WOMAN

is still active. The immediate correction of the false start *they* exemplifies that the subject "knows" after a break what the true referent suggested by the particular stage of development is. The "wrong" choice *they* nevertheless demonstrates at the same time that the original referent still is, psychologically speaking, active. Or to put it differently, the speaker feels the need to keep the *they* reference active which must have an important function for him in the sense of keeping alive a powerful higher-level coreferential network. This hypothesis is further verified in line

3.3.1 THE WOMAN (0.62) HAS GOT THE they MONEY

At this stage of the story there seems to be little evidence for a semantic resemblance as in line 3.2.2. But on a closer look THE WOMAN initiating this episode explicitly is part of the semantic network THE MAN AND THE WOMAN referred to by *they*, which shows that the competition between the *they*-plan is additionally enforced by the collision of scripts just mentioned in which the pronouns *him* and *her* struggle with each other and leave the confusion between *they* vs. he (*him*) and she (her) unsettled.

_Version 4_*

4.1.1 MY HUSBAND AN I ONCE (0.56) APPROACHED (0.20) A WISHING WELL (2.36) //

4.2.1 I wondered (0.06) I WAS WONDERING IF THI:S (1.70) uh WELL (0.48) /
4.2.2 COULD REALLY FULFILL (0.46) wishes p (0.78) my wish MY WISHES (0.40) //

4.3.1 SO (0.45) I put a I throw (0.26) THREW A COIN (0.30) INTO THE WELL (0.68) AND MADE A WISH (2.43) //

4.4.1 SUDDENLY (0.74) MY HUSBAND (1.86) LOOKED (0.40) QUITE PUZZLED (0.68) AND SURPRISED (1.22) /
4.4.2 BECAU:SE (1.35) MY WISH (1.35) HAD BECOME TRUE (0.58) //

4.5.1 HE HAD NO LONGER A LONG BEARD (0.80) ONLY HIS (0.20) MOUSTACHE (0.30) WAS LEFT //

Version 4 may be described as consisting of comparatively short planning units that partly resemble regular syntactic sentence constituents and partly seem to contradict a regular grammatically based parsing strategy. The interrupting pauses are relatively short. Characteristic for this kind of lower-level ad hoc planning are the three "test runs"

(a) I wondered – I WAS WONDERING (4.2.1/2)
(b) . . . IF THIS WELL COULD REALLY FULFILL wishes – my wish my wish – MY WISHES
(c) So I put a – I throw . . .
I throw – THREW A COIN . . .

in which a competition of two processors and a final solution for one of them (the past continuous) as in (a) or a two stage competition of three processors in succession is revealed, as in (b) and (c).

Although the time intervals between the planning units, compared with version 3 for instance, are rather short in version 4 and therefore only seem to reflect lower level planning, there are indications of higher level processing beyond unit boundary lines. The subphonemic slip-of-the-tongue *p* in line 4.2.3, for example, is a first anticipation of the competition between the "*put*-plan" and "*throw*-plan" in line 4.3.1.

The three episodes of the original cartoon story are expanded into five processing episodes in the reproduction. The second story episode is added; episode 3 in the cartoon is split into two parts, the 4th and 5th story episode. It is interesting that exactly these additions and changes that aim at introducing an explanatory dimension cause processing problems.

The second episode in the text reflects a conceptual problem the subject has: The verbal information *Wishing Well* on top of the roof above the well should provide a very helpful cue for the comprehension and reproduction of the story. Why doesn't the subject just read *I was wondering if this wishing well* ... It takes a long time until he/she finally comes to the decision

2.2.1 I WAS WONDERING IF THIS WELL

Does the subject weigh whether or not this wishing well, as the cartoon explicitly suggests, may be called so? And if not, as the story suggests, why? Or does he/she have classificatory reasons, reasons of topicalisation, does he/she have a reintroduction problem after the well was called a wishing well in the first line? Has his/her choice anything to do with the establishment of a clear given-new distinction? Or does he/she "only" try to avoid repetition for stylistic reasons? Or is the later competition as to what the lady is doing: *put* or *throw* the coin in (or into?) the well already part of this processing problem, as the immediately following slip *p* may suggest? And isn't there also an evident parallel process dealing with another semantic problem the narrator is working on? Is it one wish or more wishes the lady in the story has? Does one say to *fulfill* wishes? Does one say to fulfill *wishes* or *my wishes*? And moreover, do wishing wells accept wishes in general, any wish any time, or just once in a while, or only this particular one, the one the lady (and the narrator) have in mind? It is obviously a whole battery of processors dealing with a variety of problems on different levels. Some of them are activated and packed together at this particular point. No wonder that the extreme processing load reflecting the complexity of the task the subject has to solve results in heavy peripheral disruptions of speech.

In taking over the lady's role fictitiously in making the story one of her own

4.1.1 *MY* HUSBAND AN *I* ONCE APPROACHED ...

this subject, in connection with applying the epic past, chooses a particular perspective that gives the illusion of a "real" life story. This decision certainly activates a powerful narrative device on the semantic level. Is such a perspective characteristic for L1 productions only? Or may it be transferred from L1 to L2 in order to reduce the "normal" lower level processing problems to a certain amount that relieves the narrator from an overload of difficulties? Very little is known about this.

Analysis of Temporal Variables

One of the underlying working hypotheses in the discussion of my data has been that there are many similarities in first and second language processing and that it is awfully complicated to detect and describe particular second-language processing features which are not found in first-language processing if you go beyond the phonological level. In light of the discussion of my data I wonder what your reaction would be if I asked you whether there are any first language productions in my corpus, and if so: how many? And: which ones?

Let me try to approach this problem from a different point of view.

Table 1. ANALYSIS OF TEMPORAL VARIABLES

	a	b	c	d	e	f	g	h	i	j
Version 1	43	13	3.07	24.46 s	15.63 s	63.90 %	8.83 s	36.10 %	1.76	2.75
Version 2	71	15	4.44	39.55 s	24.42 s	61.74 %	15.13 s	38.26 %	1.79	2.90
Version 3	116	23	4.83	81.80 s	31.39 s	38.37 %	50.41 s	61.63 %	1.42	3.69
Version 4	68	25	2.62	43.71 s	22.75 s	52.05 %	20.96 s	47.95 %	1.55	2.99

a – number of words
b – number of pauses
c – $\frac{\text{words}}{\text{pauses} + 1}$ = phrase length
d – total production time
e – speaking time (d - g)
f – % speaking time of total production time
g – pause time
h – % pause time of total production time
i – $\frac{\text{words}}{\text{total time}}$ = speech rate
j – $\frac{\text{words}}{\text{speaking time}}$ = articulation rate

If you compare the figures in each of the columns with each other a large number of similarities and a smaller number of striking differences can be found. The latter, of course, are of particular interest. They may be summarized like this:

(a) Version 3 is comparatively *long*.
(c) The average length of utterance in version 4 is comparatively *short*.
(d) The total production time of version 3 is comparatively *long*.
(f) The percentage of speaking time in version 3 is comparatively *low*.
(g) The absolute pause time in version 3 is comparatively *long*.
(h) The relative pause time in version 3 is comparatively *long*.
(i) The speech rate in version 3 is comparatively *low*.
(j) The articulation rate in version 3 is comparatively *high*.

This means that in light of an analysis of the temporal variables inherent in all four productions, version 3 consistently varies from the other three. It has the lowest speech rate and the highest articulation rate and it is the longest one. This subject is what Herb Seliger calls a planner. He/she takes his/her time to plan carefully and to avoid errors and later corrections. But when he/she talks he/she does that with a high speed: this subject is fluent, in spite of the low percentage of speaking time. Version 3, to conclude, is the only native speaker of English in this corpus.

The subjects

Version 1 and version 2 were produced by one and the same subject, *George*, at that time an undergraduate English major in the University of Kassel. At the time of the recording, in January and in April 1978, immediately before and immediately after a visit to the United States, he was 23 years of age. In 1978 he had been at Kassel University for two academic terms (one year). He had had nine years of English in High School (Gymnasium), with average grades in English as well as in German. Before his trip to America he had not been to an English speaking country at all.

The comparison between the two reproductions shows a certain improvement in phrase length, articulation rate and, what I have called elsewhere, editing skill. The most striking difference, of course, is that only the second production shows that George has fully understood the cartoon.

Version 3, recorded in June 1977, was produced by Carolyn, a British exchange student from the University of Reading. Unfortunately no further personal data were collected at that time.

Version 4 was produced in December 1976. At that time Barbara, an English major in Kassel, also was 23 years old. At the time of the recording she had had eight years of English in High School (Gymnasium) and four years of intensive English language training by native speakers of English (British and American) at Kassel University. A few months before the recording Barbara had come back from a 6 month study period in a Midwestern College as an exchange student. Her exposure to the English language therefore was not only considerably longer than George's but high above average in general. Not long after the recording Barbara passed her final examination with above average grades. She has been an English teacher ever since.

Conclusion

What does all this mean? If it is possible to gain some insight into the mental processes of language planning and production by looking at errors and temporal variables, then we should continue to collect and analyse data in our endeavour towards a theory of language processing and acquisition.

Such a theory cannot in principle be different for the first and second language since there is one and only one common human language processing system and various linguistic data to be processed. In order to be responsive to its task environment, this system such as all executive systems must operate opportunistically with certain degrees of freedom at its periphery. It is likely to produce competition of plans and errors. No hearer or speaker is errorless.

The assumption that errors are characteristic for a certain insufficient not yet completed stage of acquisition in interlanguage or second-language development *only* or *mainly* is therefore wrong. There is rather competition of plans on all levels in L1 and L2 through all stages of development. And there is, consequently, a tremendous amount of heterogeneity and variance from each particular individual to the other.

First and second language processing, from a procedural perspective, is identical with respect to the activation, shaping, filtering and packaging of elementary processes. Many are used universally across languages; and others are language specific. What one has to learn in acquiring a second language is to make use of the processing capacity gained in L1 and to sort or filter out those processes which cannot do the equivalent L2 jobs.

The number of universal language processes seems to be very large. Transfer then means the use of such universal processes across languages; interference means the lack or inadequate state of the sorting out procedure mentioned previously.

For all these reasons every human information processing system is a compound one.

Any future theory of language acquisition should start with the assumption that there are a lot of similarities between first and second language processing, that one's primary language ability has – and should be considered to have – an extremely important function in second-language acquisition.

NOTES

* These data have been presented in a paper entitled "First and Second Language Processing: Similarities and Differences" during the First AILA Commission on Psycholinguistics International Conference in Milan, November 1-3, 1982.

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ERRORS IN LEXICAL PROCESSING

Introduction

This paper deals with similarities and differences in foreign language and native language processing, as seen from a lexical point of view. I focus here on the production of speech, ie. the search for and use of words. The planning of speech as such is not open to direct observation, since it is something that takes place in the speaker's mind. By studying certain aspects of output, however, we can get at least an approximate idea of what is taking place. Thus we can use slips-of-the-tongue, writing errors, aphasic speech or some temporal properties of speech, for example, to make some hypotheses and projections about inner speech. Various psycholinguistic tests can also be used to throw some light on lexical processing, eg. shadowing tests, reaction time tests or tip-of-the-tongue -tests. I discuss below the role of errors in lexical FL and NL processing mainly on the basis of speech error data of Finnish speakers. I discuss the influence of speech planning and monitoring on errors and also the influence and management of interactional situations.

Lexical errors and speech planning

Speech, naturally, is planned beforehand. Without going into any detail,[1] the planning procedure includes such phases as activation of the material needed for the utterance, selection of the material and its temporal organization. In the case of lexical processing, words are chosen from the mental lexicon and put into linear order. This, of course, is an oversimplified view of the procedure and there are problems of what exactly a word is, how the lexical organization is carried out, and whether there is more than one lexicon etc. However, by an examination of the similarities and differences of NL and FL lexical processing, it could easily be supposed that the processes must differ. It is natural, and indeed obvious, to assume that a native language vocabulary is large and that its items are easily available. Native items are acquired steadily throughout an individual's life and usually in meaningful communicative situations. The environmental knowledge attached to the words is considerable. The situations in which a native speaker does not find words are rarer. On the other hand, a native speaker more often experiences another kind of difficulty: that of selecting the item that would convey his meaning precisely. That is, a native speaker often has more than one possibility to express his idea. This situation results in eg.lexical blends.[2]

> The speaker wants to say 'We can't expect them to . . .'. He hesitates between two possible words for 'expect': *odottaa* and *edellyttää*. What he says is 'Ei voi *odelluttaa* . . .': a blend of the two synonymous items.

A similar situation, ie. the existence of more than one candicate for the same lexical position, is also attested by the utterance in which the synonymous item is placed into a later sentence position.

> The speaker intends to say that she will change a temporary arrangement into a permanent one. She says 'Mä muutan sen *väliaikaisesta tilapäiseks'*. *Väliaikainen* and *tilapäinen* are both synonyms for temporary and thus she says she will make a temporary arrangement into a temporary one.

Moreover, lexical slips in the native language tend to be ones in which the slip and the target item are semantically related, not formally related. This is a reflection of the normal production process: when activating items, the whole "semantic field" is also activated and the items sometimes become confused.

> An example of these very common slips is a question 'Ootko hiihtäny ollenkaan tänä *kesänä*?' 'Have you been skiing this *summer* at all?' When the listener looked questioningly at the speaker, he corrected himself 'I mean this *winter*. Was this one of those slips you are collecting?'

Such slips reflect the normal procedures of speech processing. However, when speaking a foreign language, the problems of a speaker are presumably different. His vocabulary is not very large, and the items are not easily available: the speaker more often experiences word-finding difficulty. Thus the errors in lexical processing are also of a different type. The lexical errors of a foreign speaker tend to be slips related to malapropisms of a native speaker, ie. word substitutions on the basis of formal similarity.

> The following errors are committed by Finnish speakers of English. One speaker claims that 'tests of *audible* perception ...' have proved something, another one states that the question was *appreciate* instead of *appropriate*, while a third uses *instruction* instead of *introduction*, etc.

What is the reason for the presumed dominance of the malapropism-like lexical error in foreign language speech production? It can be suggested that when a speaker is faced with the situation in which the word is temporarily not available to him, he nevertheless knows something about the properties of a word and searches among the items that have similar features. That there are certain more salient properties of words is well attested by several experiments (see eg. Cole, Jakimik & Cooper 1978 for listening-for-mispronunciations -tests; Brown & McNeill 1966 for tip-of-the-tongue -tests and Fay & Cutler 1977 for malapropism data). These salient properties include the initial and final segments of a word and its syllable number and stress pattern. When searching among the items that share some or all of these features, the speaker sometimes makes an erroneous decision, ie. selects a wrong word. This happens more often in foreign language processing, since foreign items are not as fully established and are used more seldom than native ones. Language teaching methods can also be regarded as influencing such errors: if words are learned as formal items, eg. as lists of translation equivalents in dictionaries or in textbooks, and not in textual contexts and interactional situations, it is natural that the formal properties are emphasized.

Thus the reasons for lexical processing errors in the native language and a foreign language are slightly different. The native errors tend to be 'fluent', ie. they reflect the fact that the speaker has a well-established lexicon, to the items of which he has easy access. On the other hand, foreign language errors tend to be 'disfluent'. They reflect the fact that the speaker has difficulties in obtaining access to the items.[3] It also appears that the boundary between a mistake and a slip is not very clearcut. In fact, the errors made in foreign language processing and malapropisms are somewhere in between. It can be claimed that a mistake is something that is in accordance with the speaker's intention but violates the rules of the linguistic community around him. A slip would be something that is against the speaker's intention and something that he, in most cases, is able to correct. For obvious reasons, however, the intention of the speaker cannot always be known. Furthermore, it can be doubted whether the speaker can or is willing to discuss such things, even when asked. Malapropisms, for example, can probably be recognized as wrong items by the speakers, but only if the matter is brought to their attention.

Lexical errors and speech monitoring

Monitoring is a process which can detect errors in the speech plan or in speech execution. This process effectively covers our speech production most of the time, but, as shown by the occurrence of slips, is not automatic. The monitoring of the linguistic correctness of the message can perhaps be seen as a part of a more total process that takes care of such factors as the selection of the topic of conversation, avoidance of certain topics, selections of a suitable register or degree of formality etc. If monitoring is seen as such a process, it seems natural that the system is attuned to take care of different kinds of slips according to the situation. Thus native speakers are more concerned about the 'sociolinguistic' or interactional correctness and pay attention to such factors. In foreign language speech situations the main emphasis seems to be on linguistic correctness, and – owing to language teaching methods – especially on formal correctness. Thus the difference between native language and foreign language errors may also be partly attributed to the properties of monitoring.

It is rather obvious that the slips that native speakers commit are very trivial. Speakers confuse things that no adult speaker is supposed to confuse.

> 'Onks toi Tuula Pekan pikku*veli*?' 'Is she his little *brother*?' is a confusion of one of the most basic lexical items *veli* and *sisko*, 'brother' and

'sister'. Not even the monitor system can suppose that anyone would presume that a woman could be anybody's brother.

In other words, everyday concepts and common words are taken for granted. Perhaps this is also why they are very easily involved in slips, and slips of this type are in fact extremely common.

A small test carried out in the Speech Research Laboratory at the University of Jyväskylä may also throw some light on the properties of monitoring. The test measured the reaction times and the correctness of reactions to Finnish sentences that included deliberate errors made to resemble slips of spontaneous speech. The detection of errors in test sentences naturally differs from the process of monitoring one's own speech, but probably involves certain similarities as well. The test subjects (N=7) heard 30 sentences, of which 10 were correct and 20 included an error. The types of slips were as follows: 1. word substitutions in which the substitution was semantically related to the correct item, eg. 'Tämän viikon *radio*-ohjelmassa on amerikkalainen elokuva Sinuhe Egyptiläinen' 'This week the *wireless* presents the American film "The Egyptian"', 2. word substitutions in which the substitution was phonologically related to the correct item, eg. 'Perinnöllisyystutkija Aarno Mäki totesi *indefiniittisten* kaksosten määrän kasvaneen huomattavasti' 'The geneticist Aarno Mäki stated that the amount of *indefinite* twins has increased considerably', 3. blends, eg. 'Markkinoille tullut uusi margariini on *houkullista* ja helppolevitteistä' 'The new margarine is delicious and easy to spread', in which the word *houkullista* is a partitive case of a blend of two words ie. *herkullinen* 'delicious' and *houkutteleva* 'tempting', and 4. segmental transpositions eg. 'Lapuan *p*iippakunnan *h*iispa avasi eilen Turun piispainkokouksen', in which the initial segments of *hiippakunnan piispa* have been transposed. 'The bishop of the diocese of Lapua opened the episcopal conference'. The subjects had to decide whether the sentence was an acceptable Finnish sentence by pushing a button. The following table summarizes the results.

Table 1. Reaction times and correctness of reactions in different types of error.

	Correct reactions (%)	Average reaction time (msec)
Formal word substitutions	54	1880
Semantic word substitutions	86	2090
Blends	75	2140
Segmental transpositions	100	1370

The results indicate that slips involving segmental transpositions are easiest noticed: they were observed without exception. This may be due to the fact that such slips produce non-words. The word is, as shown by recent experimental research[4] a central unit in speech perception: it seems justified to assume that non-words are picked out more easily. It is also clear that slips involving the whole word were noticed more irregularly. There was much more hesitation, which means longer reaction times. The formal word substitutions, ie. those resembling spontaneous malapropisms, were the most difficult to detect. The listeners were ready to accept the incorrect sentences in almost half the cases. Both the speakers and the listeners tend to make mistakes as regards the more infrequent words: speakers tend to use words that share formal properties with the correct one and the listeners tend to accept these words. It is also rather interesting that blends were rather difficult to detect. This is not so surprising, however: it is well-known, for example, that blends are potential candidates for linguistic innovations. They somehow seem to have a high probability, since they can unite two separate but related meanings, as in the case of 'delicious' and 'tempting' for example, or they offer an expressive way of saying things briefly and effectively.[5] The present writer, for example, had to consult a dictionary before she was convinced that there was no such word as *irtoimenaan* in Finnish, but that it was a blend of *irrallaan* and *valtoimenaan*, meaning approximately 'unleashed'.

Lexical errors and the speech situation

In native language speech processing, the effect of the outward speech situation seems more noticeable. Thus the things the speaker sees, hears, feels, or happens to think may influence the output of speech more than when speaking a foreign language.

> Somebody is looking for scissors and he is instructed 'Ne on siinä *nauhassa*', instead of the correct 'Ne on siinä *naulassa*' 'They are hanging on the *tape*' instead of 'They are hanging on the *nail*'. The slip was influenced by the fact that there was some recording tape hanging on the same nail as the scissors.

The situation is in fact a decisive factor in the definition of a slip: there are many slips that do not violate any linguistic or pragmatic rule. They are impeccable utterances in every other respect except one: they do not fit the interaction, and so they are wrong from the point of view of what is happening, or what is presumed by the participants of the interactions.

> The speaker is going to the post office but she says: 'Mun täytyy mennä *pankkiin*' 'I must go to the *bank*'. The slip can thus be recognized only by the speaker or by someone who knows the situation and the intention of the speaker.

On the other hand, when speaking a foreign language, the speaker focuses more on the linguistic programming, as mentioned above. This also means that the causes for his slips can be found more in his linguistic knowledge and methods of processing, ie. his errors tend to result from the inside rather than from the outside. There is evidence, for example, that foreign language learners tend to ignore the outward situation and thus also miss the important non-verbal cues in the conversation (cf. Valokorpi 1981).

Lexical errors and their management

From the point of view of interaction, it is also interesting to study how people manage a problematic situation, ie. what happens if they do not find a word immediately, or if they commit a slip. If a native speaker does not immediately find a suitable word he does not seem to become anxious or nervous. He usually seems to pay no attention to such a situation at all: he is able to explain what he tries to say by means of a paraphrase. In addition, he may convey his idea by using some other form of expression, eg. a gesture or a facial expression. Or, when searching for a word, he may win time by using empty phrases or expressions like 'what-do-you-call-it' etc. Unfortunately, foreign language speakers seem to be more anxious as regards these situations. Foreign speakers are more apt to awkward pauses, for example, since they often lack the above-mentioned procedures when communicating in a foreign language. Also, especially in test or teaching situations, knowing that their interactants know their mother tongue, they tend to resort to their native language.

> A Finnish speaker who is doing a picture describing task in English does not remember the word 'fountain pen' and uses a Finnish word instead: 'There is something wrong with your . . . *täytekynäs*'. There is, however, an English plural suffix to show that she knows what she's doing.

It is obvious that more attention should be given in language teaching to the various mechanisms of natural conversation and in this way relieve the anxiety felt in linguistically problematic situations.

If slips actually occur, native speakers are usually able to make fast corrections. For example, in the middle of a word, when the speaker realizes that he is going to say something wrong, he can correct himself. On the whole, however, it often happens that the corrections are too fast, ie. he is eager to correct, but acts too fast. This can of course lead to situations that resemble the line of thought of a Marx Brothers comedy, and that are delightful for a slip corrector.

> A speaker wants to express how tanned she was the summer before. Her intention is to say 'Mä olin ruskee kun *papu*', using a Finnish idiom literally meaning 'brown as a bean'. What she actually says is 'Mä olin *ruskee kun papukaija*', meaning 'I was brown as a parrot'. Very quickly she realizes she has made a wrong comparison: parrots are not brown. She corrects herself: 'Tai paremminki *vihree kun papukaija*'. 'I mean green as a parrot', stressing the word *green* emphatically, and completely confusing her original idea.

Conclusion

I have suggested above that lexical errors are different in NL and FL processing, and discussed some of the reasons for this. I have compared the behaviour of the fluent native speaker to that of a foreign learner who has had a rather formal teaching, with an emphasis on the linguistic code and not on communication. In everyday communication, most of the speakers, whether native or foreign, probably behave in a way that lies between these two opposite points; some people experience considerable stress when speaking their mother tongue and some people feel no anxiety in communicating in a language of which they have very little knowledge. I think, however, that the influence of the situational and interactional factors can also be clearly seen in the resulting errors, native and foreign. This fact has received little attention in the present discussion of speech error data, which is linguistically oriented, and thus needs further investigation.

NOTES

1. For a fuller discussion on the properties of speech planning, see eg. Butterworth 1980 or Laver 1980.
2. There are other types of blends, see eg. Fay 1982.
3. The concept of fluent and disfluent errors can also be applied in reading errors as well. As shown by eg. Lehtonen & Heikkinen (1981), errors in reading may have different causes.
4. See eg. Cole & Jakimik (1980).
5. That blends seem to cause aesthetic experiences can be seen in the fact that they are much used in advertisements and in fiction as well.

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DATA TYPES AND SECOND LANGUAGE VARIABILITY

Introduction

One major concern in empirical L2 acquisition research is the question what kind of data best reflect the learners' current interlanguage competence, and what elicitation techniques should preferably be used in order to obtain the relevant data. Most treatments of these questions show that there are no simple and straight-forward answers to them. However, in many discussions, the underlying assumption is that it is, in fact, possible to argue in favour of certain kinds of data as being "correct", or decide on elicitation techniques in absolute terms, i.e. regardless of the goal of a certain study or the particular linguistic phenomenon that is focused upon.

Here, it will be argued that this is not possible. It will be claimed that the interaction between learner variables and linguistic factors must be considered in any selection of data. An obvious example is the interrelationship between the learner's degree of L2 proficiency and the complexity of the linguistic phenomenon that is studied; it seems reasonable to suppose that different degrees of proficiency allow different ranges of data types for the study of a particular phenomenon, and phenomena of varying complexity likewise make possible the use of different kinds of data at a certain phase of acquisition.

A further assumption held in this paper is that it must be considered one of the goals of L2 acquisition research to construct a theory which has the power to predict and explain how the learner's interlanguage competence is put to use in its various manifestations. This means that no data type can be excluded in advance. Rather, a specific data type should be studied along with other data types on the same linguistic phenomenon from the same learners in order to define the relationships between the various kinds of data and single out the conditions for production and perception of a particular kind of data in a certain situational context.

The present paper reports on ongoing research into these questions. The presentation is deliberately kept short, and in many places information that would be needed in order to replicate the studies reported on here, has been omitted due to lack of space. The full account is given in papers that are referred to below.

Data types and elicitation techniques

In addition to what has been called *observational data*, i.e. data obtained from more or less spontaneous speech and writing, various more technically elicited data types have been used in L2 acquisition research during the past 15 years. These other types of data have sometimes been gathered together under the label of *experimental data*. Among the most commonly used types are

1. Elicited production, often with pictorial stimuli, e.g. Berko tests, the Bilingual Syntax Measure, and guided composition
2. Manipulation of given linguistic material, e.g. sentence combining and sentence completion
3. Intuition, grammaticality judgement tests
4. Introspection
5. The cloze procedure
6. Imitation
7. Dictation or partial dictation
8. Translation

Most of these techniques have been used to elicit both spoken and written data. In some of them, both production and perception is exercised, while others require more of the one than the other. Only the first technique comes anywhere near what can be termed "natural" language use, i.e. intended communication of a certain content by a speaker/writer to a listener/reader. This does not imply, however, that elicited production is necessarily the type of experimental data that provides the most illuminating information.

Lines of argumentation regarding choice of data

The question of what data types should be preferred in L2 acquisition research, i.e. the search for *the* data, has been the focus of attention in a number of studies. One late-comer to this discussion is Tarone (1979). Referring to the 'observer's paradox', she states that 'the aim of (applied) linguistic research is to describe the way people talk when they are not being systematically observed'. She observes that interlanguage speakers exhibit stylistic variation just like native speakers, and contents that the most systematic phonological and grammatical patterns are to be found in the 'vernacular' style. This leads her to conclude that observational data are to be preferred to experimental data.

In other types of study, the insufficiency of using observational data alone has been pointed out. Corder (1973), for example, mentions both external and internal constraints on such data. External constraints are factors such as limits on the number of observations; low frequency of the observed linguistic phenomenon is one example of internal constraints. Corder's conclusion is that observational data can only give a rough indication of the patterning of most linguistic phenomena in second language acquisition and use.

The most commonly held view, I think, is that observational data in the long run must be combined with experimental data, and that experimental data allow the researcher to go beyond the limitations imposed on interlanguage studies with its emphasis on learner production and open up areas of interlanguage for investigation which may rarely be manifested in spontaneous speech and writing.

Reflecting this view, combinations of observational and experimental techniques have been used and either explicitly or implicitly discussed in some studies. Likewise, combinations of various experimental techniques alone have also been used. For example, in a study by Swain et al. (1978), three test types were used to tap the order in which certain grammatical rules of French were learnt by English speaking children in a French immersion program. The tests were a Berko test (i.e. *this is a stimp; here we have two* ...), imitation, and translation. All three data types showed a parallel and successive increase in mastery of the target morphemes, and the results were consistently better on the translation task than on the imitation task; the lowest scores were obtained on the Berko test. It should be observed that these tests were used mainly in order to get a quantitative measure of improvement in performance over time.

Schmidt (1980), on the other hand, aimed at a qualitative description of deletions in coordinate structures using various techniques to obtain data. The results indicated that the interlanguage rules used by the learners in the different data varied to some extent. It was concluded that different descriptions could have been reached, had any one of the techniques been used in isolation.

To summarize so far, I believe that we ought not to expect exactly the same patterning in different data types from the same individuals, but rather variability because of stylistic variation, variation due to various degrees of formality in the situational context, and other variation dependent on mode of linguistic processing. These conditions should result in differences, at least of a quantitative nature, e.g. more or less targetlike behaviour under certain conditions. It may also be the case that some qualitative differences exist, i.e. different, even contradicting, rules may be used in different data types. Such contradicting data may be the result of the learner's application of a later acquired rule in some kinds of data, for example where monitoring is possible, while the rule it is substituted for is used in other kinds. What we should hope for in these cases, however, is some kind of predictable systematicity in variation.

Present investigations

In order to study how the same learners deal with the same linguistic phenomena in various data types, three linguistic areas of Swedish were chosen for investigation:

1. pronominal copies in relative clauses
2. sentence negation
3. subject-verb inversion in declarative main clauses

I have chosen to exemplify from the first two areas in order to illustrate our results. The study of subject-verb inversion was carried out by Hans Dahlbäck, and it is reported in Dahlbäck (1981). As mentioned above, only a very brief presentation of our research will be given here. For the pronominal copies study, further information is given in Svalberg (1981), Hyltenstam (1981), and Hyltenstam & Svalberg (1982), for the sentence negation study (in which the same subjects took part as in Dahlbäck's subject-verb inversion study) in Hyltenstam (forthcoming).

The syntactic patterning in the two areas can briefly be described in the following manner. In general, *pronominal copies in relative clauses* do not occur in Swedish. If they had, we would have found sentences of the following type: **Mannen som jag mötte honom igår kommer här,* i.e. 'The man who I met him yesterday comes here' instead of *Mannen som jag mötte igår kommer här,* i.e. 'The man who I met yesterday comes here'. However, under certain conditions, where the clause initiating particle is moved up one clause, pronominal copies also turn up in Swedish as in *De har anställt en man som jag undrar om han är pålitlig,* 'They have hired a man who I wonder whether he is reliable' (see Ljung (1973) for a discussion and more examples). Languages differ in whether or not they have pronominal copies in relative clauses at all, and, if they have, to what extent such elements are utilized. Keenan & Comrie (1977) show that every step in the so called NP Accessibility Hierarchy is a cut off point as regards the deletion of a pronominal copy representing the relativized position.[1] Thus, pronominal copies appear to a successively larger extent as we go down the hierarchy. The NP Accessibility Hierarchy is given here for convenience:

SU > DO > IO > OBL > GEN > OCOMP[2]

As for *sentence negation,* in Swedish it is expressed by a negative particle *inte*[3], 'not', which is essentially placed immediately after the finite verb in main clauses and immediately before it in subordinate clauses. Certain elements may be placed between the finite verb and the negative particle in main clauses, elements such as inverted subjects, especially unstressed ones (*idag kommer han inte,* literally, 'today comes he not'), unstressed objects (*vi såg honom inte,* 'we saw him not'), and other adverbs (*han kommer säkert inte,* 'he comes certainly not'). For a more detailed account, see for example Teleman (1974) and Andersson (1975). A typological study of sentence negation is found in Dahl (1979).

The choice of these two syntactic areas for the present investigation was motivated by two considerations that were not related to the present question of data type variability. Firstly, since their typological patterning can be said to be reasonably well described (Keenan & Comrie 1977, Dahl 1979), it was possible to investigate to what extent there is a parallel patterning in typological and second language acquisition contexts. This question has been considered in Hyltenstam (1977, 1978) for sentence negation, and in Hyltenstam (1981) for pronominal copies in relative clauses. Secondly, both areas exhibit structurally patterned variation which was also demonstrated in these studies. Therefore, it was interesting to see, whether the same kind of patterning in this variability could be found in different data types.

The two studies conducted on pronominal copies in relative clauses and sentence negation respectively can be described as follows:

Pronominal copies in relative clauses: Data types were

1. Elicited written production (a picture was used as stimulus)
2. Elicited oral production (a picture identification task)
3. Imitation
4. Intuition
    a) oral
    b) written

Subjects were 12 Persian, 12 Greek, 12 Spanish, and 9 Finnish speaking adult learners of Swedish. The language groups were chosen in such a way that two of the groups were native speakers of languages with pronominal copies in relative clauses (Persian and Greek) and two of languages without (Spanish and Finnish). In fact, Spanish, like many other languages which do not have these elements in their standard variety, does have pronominal copies in certain styles, at least in some regional varieties (Bejarano & Jörnving 1967).

Length of residence in Sweden was 2 years or less. The learners attended Swedish language courses at Kursverksamheten at Lund and at AMU Liljeholmen in Stockholm. They were at a fairly advanced level, having completed 350-600 hours of instruction prior to this investigation.

Sentence negation: The following data types were used:

1. Free written production
2. A modified cloze technique (one given word was to be placed in one of two slots; the technique is more like type 2 in the introductory enumeration, that of manipulation of given lingustic material)
3. A scrambled words test
4. Imitation
5. Intuition
   a) oral
   b) written

Subjects in this study were 33 adult learners of Swedish with various L1:s; 14 of them had Polish as their native language. All except 3 females from the USA and 1 male from Turkey were above the age of 20. Length of residence in Sweden was 2 years or less for all except one, who had been here for 6 years. The subjects went to courses in Swedish as a second language at Kursverksamheten in Malmö. They had had 100-500 hours of instruction at the time of data collection.

Results

If we first look at the results from the pronominal copies study, it is immediately obvious that all but one of the data types were inappropriate for the phenomenon under study with the actual groups of learners.

In *the written composition task,* a total of 183 relative clauses was produced, but the vast majority of them, or 161, were relativizations of the subject position. The remaining 22 were relativizations of the direct object position. Only 9 pronominal copies were produced. A control group of native speakers of Swedish also produced relative clauses on subject and object positions only, which means that the learners' behaviour could not be seen as a result of an avoidance strategy. Instead, it seems to be a reflection of the fact that relativization of more marked positions require a very specific pragmatic context in order to be used.

The picture identification task, with which we *elicited oral production*, forced the learners to produce relative clauses with all the positions in the NP Accessibility Hierarchy. These data patterned regularly as shown in tables 1-4. Pronominal copies were used to a larger extent in more marked positions, and the scalability figures for the different groups were high. This means that if a pronominal copy was used in a certain position, a pronominal copy could be predicted also in all lower positions in the hierarchy. Deviations from the implicational pattern are circled in the tables.

What is interesting with these results, is the parallelism between the typological pattern established in Keenan & Comrie (1977) and our second language acquisition data. It is also interesting to note that pronominal copies can turn up in data from learners who neither find such elements in their L1 nor in their L2.

The grammaticality judgement task gave a very irregular result. Tables 5-8 from the written intuition data exemplifies this. The data from the spoken grammaticality judgement task also lack patterning. The main difference between these two sets of data is that acceptance of clauses with pronominal copies is higher in the spoken test. Since no clear patterning can be found in these data, it is reasonable to believe that factors other than the presence of pronominal copies are responsible for a large number of the judgements.

Finally, in *the imitation task*, a large number of incorrect imitations were produced. Most of these consisted of omissions of one or several elements from the model sentence. A total of only 11 pronominal copies was produced. (Only grammatical sentences, i.e. without pronominal copies, were used as stimulus sentences.) The omissions generally resulted in sentences where a relativization of a more marked position was changed so that a less marked position, preferably the subject, was relativized, e.g. the sentence *Kvinnan som jag drömmer om* . . . , 'the woman that I dream of' was changed to *Kvinnan som drömmer* . . . , 'the woman that dreams'.

The data on sentence negation were analyzed according to the same principles that had been employed in my earlier work in this area (Hyltenstam 1977, 1978).

Tables 1-4: Retention (+) and deletion (-) of pronominal copies for four groups of learners of Swedish. Elicited oral production. Implicational scaling according to the NP Accessibility Hierarchy (Keenan & Comrie 1977). From Hyltenstam (1981).

Table 1: Speakers of Persian Scalability 93.1.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
21	-	-	-	-	-	-
32	-	-	-	-	+	+
17	-	⊕	⊕	-	+	⊖
18	-	⊕	⊕	-	+	+
7	-	-	+	+	+	+
16	-	-	+	+	+	+
6	-	-	+	+	+	+
34	-	+	+	+	+	+
30	-	+	+	+	+	+
28	-	+	+	+	+	+
29	-	+	+	+	+	+
15	-	+	+	+	+	+

Table 2: Speakers of Greek. Scalability 97.1 (if 0 = -), 98.7 (if 0 = +).

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
20	-	-	-	-	-	-
41	-	-	-	-	+	⊖
14	-	-	-	-	+	0
43	-	-	-	-	+	+
12	-	-	-	-	+	+
13	-	-	+	+	+	+
40	-	-	+	+	+	+
27	-	+	+	+	+	+
42	-	+	+	+	+	+
22	-	+	+	+	+	+
11	-	+	+	+	+	+
10	-	+	+	+	+	+

Table 3: Speakers of Spanish. Scalability 90.3.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
2	-	-	-	-	-	-
31	-	-	-	-	⊕	-
37	-	-	-	-	⊕	-
33	-	-	-	-	⊕	-
3	-	-	-	-	-	+
8	-	-	-	-	+	+
5	-	-	⊕	-	+	⊖
4	-	-	⊕	-	+	+
9	-	-	⊕	-	+	+
19	-	-	+	+	+	+
24	-	+	+	+	+	+
35	-	+	+	+	+	+

Table 4: Speakers of Finnish. Scalability 85.2-92.6 depending on whether 0 = + or -.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
48	-	-	-	-	0	-
52	-	-	-	-	0	-
44	-	-	-	-	⊕	-
47	-	-	-	-	⊕	-
51	-	-	-	-	⊕	-
45	-	-	-	0	⊕	-
50	-	-	-	-	0	+
46	-	-	-	-	+	+
49	-	-	-	-	+	+

Tables 5-8: Learners' intuitions about written relative clauses containing pronominal copies. (+ = acceptable, – = not acceptable, x = a pronominal copy in the same position both accepted and not accepted.)

Table 5: Speakers of Persian.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
21	–	–	–	–	+	–
7	–	x	–	+	x	–
17	–	+	x	–	+	–
30	–	+	x	–	+	x
15	–	+	x	+	x	+
32	–	+	+	x	x	+
34	–	+	+	+	+	–
6	x	+	+	x	+	x
28	x	x	+	+	+	x
18	x	+	+	x	+	+
16	+	+	+	x	x	+
29	x	+	x	+	+	+

Table 6: Speakers of Greek.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
20	–	–	–	–	–	–
11	–	–	–	–	x	–
12	–	–	x	–	+	+
40	–	x	+	x	–	+
14	–	+	–	+	+	x
22	x	x	x	x	+	x
13	x	x	–	+	+	x
41	x	–	x	+	+	+
27	+	+	x	–	x	–
10	+	x	x	+	–	+
42	+	+	x	+	–	+
43	–	+	+	x	+	+

Table 7: Speakers of Spanish.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
2	–	–	–	–	–	–
31	–	–	–	–	–	–
8	–	x	–	–	–	–
3	–	–	–	–	–	x
37	–	–	x	x	–	–
19	x	–	x	–	–	+
9	–	x	x	–	+	–
35	x	–	x	–	x	x
4	x	–	+	+	–	+
33	–	+	x	+	+	x
24	x	+	+	+	+	–
5	x	+	+	+	+	+

Table 8: Speakers of Finnish.

Subj nr	SU	DO	IO	OBL	GEN	OCOMP
48	–	–	–	–	–	–
49	–	–	–	x	–	–
54	x	–	x	–	–	–
53	–	x	x	–	–	–
47	x	x	–	–	+	–
50	x	–	x	x	+	–
46	x	+	x	+	x	–
45	+	x	x	x	+	x
52	x	x	+	–	+	+
51	x	x	+	x	+	+

There, on the basis of data from a combined cross-sectional and longitudinal study, it was suggested that learners of Swedish go through a number of phases in their acquisition of the placement rules for the Swedish negative particle: Initially, the syntactic distinction between main and subordinate clauses as regards the placement of the negative particle is not observed. This distinction is acquired only in later stages. In the initial phase, a transition from preverbal to postverbal placement of the particle was hypothezised; in this phase, auxiliary verb contexts were more favourable for postverbal placement than main verb contexts. In later phases, where the syntactic distinction between clause types starts to be observed, the task is to 'move back' the particle in subordinate clauses. In this transitional phase, main verb contexts are more favourable for the placement of the particle before the verb than auxiliary verb contexts. *Typical* patterns in the different phases are the following, where phase I and III are variable and exhibit the implicational relationship between more or less favourable contexts. (Figures indicate proportions.):

	Main+sub.clause	
	Aux+NEG	MV+NEG
Phase I	85	60
Phase II	100	100

	Main clause		Sub.clause	
	Aux+NEG	MV+NEG	NEG+MV	NEG+Aux
Phase III	100	100	85	60
Phase IV	100	100	100	100

It is uncertain to what extent the learners go through the initial transition from preverbal to postverbal placement, since many learners in the study are caught when they have already gone through their initial phases. In any case, a number of lerners were found at phase I. These learners had various types of L1:s. Various explanations are proposed for the acquisitional path in Hyltenstam (1977) and (1982).

Of the five data types on sentence negation studied here, *the free written composition task* yielded only fragmentary data, i.e. the data did not reflect negation in all the context types that had turned out to be interesting in previous studies. There were for example very few negated subordinate clauses, only 8, and most of these occured in a context where both preverbal and postverbal placement of the negative particle is possible in Swedish (cf. Andersson 1975). On the other hand, 87 negated main clauses were produced, but only 4 of these were erroneous, as for example *Han inte gillar sin fru*, 'he not likes his wife' instead of the correct version *Han gillar inte sin fru*, 'he likes not his wife'. Obviously, no patterning between preverbal and postverbal placement of the particle was discernible.

The imitation data is not yet fully analyzed and must therefore be left out here. The results from the remaining data types are shown in tables 9-12. In these tables, it is also indicated which learners are to be found in each of the four phases mentioned above.

In this case, we see a similar patterning in the different data types, except for the intuition data with spoken sentences. Obviously, the oral intuition task was too demanding for the actual group of learners. As can be seen from table 12, the responses here are more irregular than those for the other data types, and in some cases no response at all was given (marked by question marks in the table).

Table 13 shows in summarized form in what phases each individual learner can be found in the different data types. It can be seen here, as in tables 9-12, that the type that differs most is the oral intuition data, and, in fact, the figures here must be considered quite uncertain, as mentioned above. As regards the other three data types, 12 learners are fully stable in what phase they are found in. Typically, these "stable" learners are found at phases where categorical rather than variable rules are used, i.e. at phase II or IV. 10 out of the 12 are found at one of these two phases, the remaining two at phase III, which is characterized by categorical postverbal placement of the negative particle in main clauses and variable post- and preverbal placement in subordinate clauses. Of the remaining learners, 12 range over two phases and 9 over three. It might be thought strange that one and the same learner can be found at such distant phases in different data types. A closer look at some of these cases, however, reveals that the differences might not be that large, although the analysis places the learner at different phases. Take for example subject nr 2 in tables 9-11. In the cloze procedure data, all negative particles are placed after the finite verb categorically. In the scrambled words data, all negative particles but one in a subordinate clause are likewise placed postverbally. In the written intuition task, finally, all particles but two, one in

Table 9: **Sentence negation in the cloze task**

Ph	S	A+N	M+N
I	17	58*	67
	5	67*	75
	11	83*	100
II	1	100	100
	2	100	100
	3	100	100
	8	100	100
	14	100	100
	19	100	100
	27	100	100
	33	100	100

Ph	S	A+N	M+N	N+M	N+A
III	32	100	83	17	0
	18	100	100	17	0
	26	100	100	0*	17
	10	83*	100	0*	33
	12	100	100	33	17
	31	100	100	50	0
	29	83*	100	50	17
	6	100	100	50	17
	25	100	100	33	33
	15	100	100	67	67
	22	100	100	83	83
IV	4	100	100	100	100
	7	100	100	100	100
	9	100	100	100	100
	13	100	100	100	100
	16	100	100	100	100
	20	100	100	100	100
	21	100	100	100	100
	23	100	100	100	100
	24	100	100	100	100
	28	100	100	100	100
	30	100	100	100	100

Table 10: **Sentence negation. Scrambled words**

Ph	S	A+N	M+N
I	22	75	42
	32	92	58
	17	92	75
II	1	100	100
	8	100	100
	10	100	100
	14	100	100
	18	100	100
	19	100	100
	25	100	100
	27	100	100
	31	100	100
	33	100	100

Ph	S	A+N	M+N	N+M	N+A
III	6	100	83	17	0
	26	100	100	17	0
	2	100	100	17	0
	3	100	100	17	0
	11	100	100	17	0
	15	100	100	33	0
	5	100	100	67	0
	12	83*	100	50	33
	29	100	100	83	0
	9	83	83*	100	17
	20	100	100	83	67
	23	100	100	100	83
	24	100	100	100	83
IV	4	100	100	100	100
	7	100	100	100	100
	13	100	100	100	100
	16	100	100	100	100
	21	100	100	100	100
	28	100	100	100	100
	30	100	100	100	100

Table 11: **Sentence negation. Intuition, written**

Ph	S	A+N	M+N
I	6	50*	58
	29	92	58
	2	83*	100
	10	83*	100
II	8	100	100
	14	100	100
	19	100	100
	25	100	100
	26	100	100
	31	100	100
	33	100	100

Ph	S	A+N	M+N	N+M	N+A
III	11	100	100	17	0
	12	100	100	0*	17
	27	100	100	0*	17
	18	83*	100	17	17
	1	100	100	17	17
	17	100	100	33	17
	5	83*	100	33	33
	9	100	100	83	33
	15	100	100	67	50
	32	100	100	67	50
	3	100	100	50*	67
	24	100	100	100	50
	28	100	100	100	83
IV	4	100	100	100	100
	7	100	100	100	100
	13	100	100	100	100
	16	100	100	100	100
	20	100	100	100	100
	21	100	100	100	100
	22	100	100	100	100
	23	100	100	100	100
	30	100	100	100	100

Table 12: **Sentence negation Intuition, oral**

Ph	S	A+N	M+N
I	6	50	50
	31	42?	67
	27	58	58
	29	58	58
	5	67	58
	15	58*	75
	2	58*	83
	32	58*	83
	33	67*	83
	14	75*	83
	8	67*	92

Ph	S	A+N	M+N	N+M	N+A
III	10	83*	100	0*	33
	25	83*	100	0*	33
	17	100	83	0*	50
	18	100	83	0*	50
	11	83*	100	33*	50
	30	100	100	50?	50?
	12	83*	100	67	50
	1	83*	100	100	17
	9	83*	100	50*	67
	24	100	100	83	50
	16	100	100	83	50
	4	83*	100	83	67?
	7	100	100	83	67
	3	100	100	83	83
	22	100	100	83	83
	28	83*	100	100	83
	30	67*	100	100	100
	13	100	100	100	83
	23	100	83*	100	100
IV	21	100	100	100	100
	19	- - -	- - -	- - -	- - -
	26	- - -	- - -	- - -	- - -

Ph = phase, S = subject nr, A = Auxiliary verb, M = Main verb, N = negative particle, * = deviation from the implicational pattern.

Table 13. The learners' phases of acquisition in various data types.

Subj nr	CLOZE	SCRAM. WORDS	INTUIT. WRITTEN	INTUIT. ORAL
1	II	II	III	III
2	II	III	I	I
3	II	III	III	III
4	IV	IV	IV	III
5	I	III	III	I
6	III	III	I	I
7	IV	IV	IV	III
8	II	II	II	I
9	IV	III	III	III
10	III	II	I	III
11	I	III	III	III
12	III	III	III	III
13	IV	IV	IV	III
14	II	II	II	I
15	III	III	III	I
16	IV	IV	IV	III
17	I	I	III	III
18	III	II	III	III
19	II	II	II	-
20	IV	III	IV	III
21	IV	IV	IV	IV
22	III	I	IV	III
23	IV	III	IV	III
24	IV	III	III	III
25	III	II	II	III
26	III	III	II	-
27	II	II	III	I
28	IV	IV	III	III
29	III	III	I	I
30	IV	IV	IV	III
31	III	II	II	I
32	III	I	III	I
33	II	II	II	I

a main clause and one in a subordinate clause, are placed postverbally. In summary, this learner seems to be on the verge of realizing the different patterning in main and subordinate clauses, and this is what turns up as slight differences in different data types.

This last example raises the question as to the appropriacy of the technique of defining and numbering phases. Such a procedure always presupposes the use of criteria, or, rather, more or less arbitrary rules of thumb, that allow the analyst to place the different learners in one particular phase. The numbering, of course, gives an impression of clearcut limits between phases. Therefore, it should be explicitly pointed out that there is nothing to support such delimitations in the successive development the learners go through. The technique should rather be seen as a device to make the description managable. The lack of compatibility between reality and description in this case could in fact be used as an argument against such descriptions. However, if the lack of compatibility is underscored rather than hidden, the procedure seems justifiable.

As regards the relationship between the different data types, it should be noted that this is no simple matter to describe, not even in cases where there is similar patterning in different data types. As table 13 shows, there is obviously no implicational relationship such that a more targetlike behaviour is found in some data types than in others for all learners. The irregular pattern may reflect a state of affairs where there is a great deal of individual variation in the use of language in its various manifestations. It might very well be easier for some learners to detect grammatical deviations in sentences they hear or read, for example, than to produce erroneous free sentences in their own speech and writing, while for others, it might be the other way around.

Discussion and conclusions

This study shows that different elicitation techniques may be appropriate for different linguistic phenomena and for learners at different phases of acquisition. In the area of pronominal copies in relative clauses, only one technique of those that had been utilized gave a patterned result with the particular groups of learners that took part in the investigation. The other techniques seem to have been too difficult for the learners to handle with such a complex phenomenon as pronominal copies in relative clauses at their actual level of proficiency. With sentence negation, on the other hand, more techniques showed patterned results. Since the learners were not the same in the two studies, no comparison can be made between the two syntactic areas in a straight-forward way. In general, however, the learners in the negation study were at a lower level of proficiency than those of the pronominal copies study. In spite of this, they were able to handle more elicitation techniques. This could be explained by various factors. One obvious such factor is the degree of complexity of the linguistic phenomenon in question. Another is the order in which the various phenomena have been acquired, and a third factor is the way the phenomenon has been handled in instruction. In our case, for example, the phenomenon of negation is extensively dealt with in instruction, while less attention is devoted to the phenomenon of pronominal copies.

It should not be seen as a contradicting result that the learners are found at different phases in the different data types. On the contrary, this must be considered quite normal; typically, more targetlike behaviour should be expected in some data types than in others.

It seems reasonable that the closer to the target the learner is in a certain linguistic area, the larger is the range of techniques that can be used to get access to the learner's interlanguage in that area. As regards level of proficiency, one of the extremes, of course, represents nativelike command of a language, and, in fact, the group of native speakers we used as a control in the pronominal copies study could competently handle all the techniques we used, and the results with all techniques were extremely stable. In early acquisitional phases on the other hand the techniques that can be used may be very restricted in number and type.

It is, however, not only the learner's level of proficiency and the actual linguistic phenomenon that are important. The choice of elicitation techniques is also dependent on other factors such as whether the learner is a child or an adult, whether the learner has a more or less extensive educational background etc. The results of this study, furthermore, point to the possibility that there is a great deal of individual variation regarding what tasks a given learner can handle, and this is an important point, since if there are differences in what types of linguistic functioning are easiest for different learners, which is almost certainly the case, this should have consequences not only for the question of data elicitation, but also for actual teaching practice.

FOOTNOTES

1. The term *position* is used by Keenan & Comrie (1977) rather than *function*. Their terminology will be followed here.
2. SU = subject, DO = direct object, IO = indirect object, OBL = oblique object; in English – and Swedish – object of preposition, GEN = genitive, OCOMP = object of comparison.
3. Marginally, there are a couple of synonymous particles, *icke*, *ej*, the use of which, however, is confined to specific styles.

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ON THE ACQUISITION OF VOCABULARY IN IMMIGRANT SWEDISH

Introduction

What kind of words does a learner pick up from the flow of speech around him when he learns a language solely by listening to target language speakers? Do different learners pick up roughly the same lexical items, or does every learner haphazardly learn words quite differently from other learners? Does the learner acquire words from all word-classes, or does he concentrate on learning content words only? And is it possible to draw any conclusions about the process of language learning from the learners' spontaneous utterances?

The following paper is a report concerning the cocabulary of six immigrants in Sweden. I shall account for what types of words they have learnt during their stay in the country, and shall also suggest a few factors that seem to operate during the process of acquisition of vocabulary.

The material

The material for this study consists of 22 hours of tape-recordings made on 15 different occasions during the first third of a 240 hour course in Swedish. This course was taught by the author.

All through the course the tape-recorder was on and registered all speech, spontaneous as well as classroom oriented. Only material from the first third of the course has been used in the study, and a total of approximately 23,000 words have been transcribed. From these were deleted all words uttered by the teacher, and all words related to the teaching situation. Thus, only sequences of informal conversations are used. The remaining 10,430 text-words (tokens) constitute the material for this study.

The informants

The informants for this study were four Greek men, a Greek woman and a Polish woman. Their ages ranged from 26 to 49, and all had lived in Sweden for between 3-15 years (table 1). All informants worked as cleaning personnel at a big office in Stockholm. With the exception of the Polish woman, none of them had received any education beyond grammar school. None of them had attended any courses in Swedish earlier, or otherwise learnt any language other than their mother tongue.

Table 1. Informants

Georgios (Ge)	Nat.	Age	Years in Sweden	Education	Lexical tokens	Lexical types
Georgios (Ge)	Gr.	43	15	6 yrs	812	196
Dimitris (Di)	Gr.	44	9	6 yrs	4329	381
Takis (Ta)	Gr.	29	6	6 yrs	2404	318
Katarina (Ka)	Gr.	40	8	6 yrs	237	101
Nikolaos (Ni)	Gr.	26	3	6 yrs	230	94
Maria (Ma)	Po.	49	3	12 yrs	2418	360

The Greek informants lived rather isolated from Swedish society, viz. they were married to compatriots and spoke Greek at home and with their friends. At work they had a minimum of contact with their Swedish supervisors and only occasionally exchanged a few words with the rest of the staff. For necessary contacts with Swedish authorities, hospitals, etc., they used municipal interpreters. They all planned to return to Greece some day.

The Polish woman, Maria, was married to a Swede and her contacts with Swedish society were much closer than those of the Greek informants. She spoke Swedish with her husband and his relatives, and almost never met with compatriots in Sweden. She did not plan on returning to Poland.

Immigrant Swedish

The term Immigrant Swedish (abbr. IS) stands for the spoken Swedish used by the six informants. The term Native Swedish (abbr. NS) is used for all kinds of spoken Swedish, and is primarily based upon an investigation of written and spoken Swedish (Einarsson 1978).

Here follow a few examples of Immigrant Swedish. The transcriptions in Swedish are followed by literal translations to English, these being as true to the Swedish text as possible.

(1) Ge: vi alla samma förstår/ vi inte så bra svenska eller Takis inte lära eller Dimitris eller Katarina/ vi lära samma alla förstår

(We all same, understand. We not so good Swedish or Takis not learn or Dimitris or Katarina. We learn all same, understand?)

(2) Di: de kanske fem fem timmar normal// den inte jobba// bara i i skolan// läsa på hemma// kommer i skola de bra// den jobba klockan sex/ jobba kommer på skola// inte läsa ingenting// ja? – – – på kvällen arbeta// på dagar arbeta// kommer skola sex timma

(It maybe five five hour normal. It not work. Only in in school. Read on home, come in school it good. It work six o'clock, work come on school. Not read nothing. Yes? – – – On evening work, on days work. Come school six hour.)

(3) Ta: den chilenare pojk fråga mej ja inte förklara om inte/ riktigt bra förklara – – – den chilenare pojk mycke bättre// han läsa varje dag på tre timma

(It Chilean boy ask me I not explain, if not real good explain. It Chilean boy much better. He read every day on three hour.)

(4) Ka: fel/ Ulla// betala// varje månad fel fel fel/ skriva

(Wrong, Ulla, pay. Every month wrong wrong wrong, write.)

(5) Ni: ja ja tycker// ja tycker att svårt svenska

(Yes I think, I think that difficult Swedish.)

(6) Ma: nej vi vi blir trött trött helt enkelt/ de går inte på oss/ nej// nej// Lära sej sakta men bra// de e bra// säkert// vi kan inte lära så fort svenska språk// vi kan inte

(No, we we get tired tired quite simply. It is not possible on us. No. No. Learn slowly but good. It is good. Sure. We can not learn so fast Swedish language. We can not.)

In example (1) Georgios explains that no one in the group knows Swedish very well and that they all have to learn in the same way. In example (2) Dimitris expresses the opinion that it is not possible to study Swedish if one has to work at the same time, because one is tired after work. In example (3) Takis tells us that he once had to explain something to another immigrant, and that he could not do it. The other boy knew Swedish much better because he studied Swedish every day. In example (4) Katarina complains about her salary. The employer always pays her the wrong sum. In example (5) Nikolaos states that Swedish is difficult and in (6) Maria says that one can't study Swedish every day, because one gets tired and because it is impossible to learn Swedish fast.

It is evident even from these short excerpts of the material that the kind of Swedish these informants use deviates in many ways from ordinary Swedish as spoken by native Swedes. Indeed it is sometimes rather difficult even to understand the meaning of the utterances, especially if one is not accustomed to the language that these people use. In fact, some of the utterances are possible to interpret only if one compares the use of certain lexical items in the whole material. Some clues to the interpretation can also be found in many of the Greek utterances that sometimes accompany the attempts in Swedish.

Number of words

As can be seen from table 1, one of the informants, Dimitris, spoke a lot during the conversations, while others (e.g. Katarina and Nikolaos) participated much less frequently. All together, Dimitris uttered 4329 words (tokens), Takis and Maria about 2400 words each and Katarina and Nikolaos only about 230 words each. Georgios, who was present at only one of the 15 analysed conversations, uttered 812 words. Table 1 also shows that some of the informants used a larger vocabulary than others. Dimitris used 381 different words (types) and Katarina and Nikolaos used only approximately 100 different words each. One should note, however, that the difference between Dimitris and Maria or between Dimitris and Takis regarding number of types is much smaller than the difference between the same informants regarding the number of tokens. Although Dimitris was the dominating speaker during the conversations, his vocabulary was very small and he had to use the few words he knew repeatedly in different contexts. The assumption that Dimitris used nearly all the Swedish words he knew to express his communicative intentions cannot be proven here, but it can be inferred. Judging from my experience as the teacher of the group, I also believe that Maria had a greater vocabulary than she demonstrated during the conversations. Georgios and Takis might also have had a slightly larger vocabulary than they actively used, while on the other hand Katarina and Nikolaos, like Dimitris, probably used all the Swedish words they knew over and over again.

Number of tokens

Table 2 below displays the number of tokens of each word-class for each informant and for the whole group. The percentages for each word-class are also shown. The far right hand column of this table contains the percentages of the same wordclasses in spontaneous spoken Swedish as used by native speakers (Einarsson 1978: 166).

Looking at the two final columns in table 2 (those labelled Tot. and SS), it is obvious that there are differences regarding the distribution of word-classes. In Immigrant Swedish, nouns and verbs are used almost twice as frequently as they are in Native Swedish, and interjections and numerals have an even higher frequency ratio when compared to the Swedish material. Conversely, auxiliaries hardly exist at all in IS, and adverbs, pronouns and conjunctions have a considerably lower percentage in IS than in NS.

If we now consider the individual informants, we notice that Dimitris and Katarina use more nouns than the others. Almost 30% of Katarina's words are nouns, for example. Georgios has the highest percentage of verbs, almost

Table 2. Number of tokens

	Ge	Di	Ta	Ka	Ni	Ma	Tot.	SS
nouns	143(17.6)	955(22.1)	455(18.9)	70(29.5)	42(18.3)	292(12.1)	1957(18.8)	(9.9)
verbs	160(19.7)	714(16.5)	406(16.9)	21(8.9)	41(17.8)	344(14.2)	1686(16.2)	(9.3)
aux.	22(2.7)	28(0.6)	37(1.5)	5(2.1)	1(0.4)	43(1.8)	136(1.3)	(11.0)
adj.	21(2.6)	182(4.2)	64(2.7)	23(9.7)	11(4.8)	135(5.6)	436(4.2)	(4.6)
adv.	101(12.4)	623(14.4)	223(9.3)	46(19.4)	26(11.3)	411(17.0)	1430(13.7)	(18.8)
pron.	155(19.1)	738(17.0)	439(18.3)	24(10.1)	35(15.2)	526(21.7)	1917(18.4)	(23.6)
interj	23(2.8)	210(4.8)	237(9.8)	14(5.9)	25(10.9)	288(11.9)	797(7.6)	(2.2)
num.	23(2.8)	196(4.5)	104(4.3)	5(2.1)	11(4.8)	45(1.9)	384(3.7)	(0.3)
prep.	58(7.1)	259(6.0)	194(8.1)	13(5.5)	14(6.1)	96(4.0)	634(6.1)	5.3)
i.art.	11(1.3)	79(1.8)	33(1.4)	1(0.4)	1(0.4)	17(0.7)	142(1.4)	(1.3)
conj.	61(7.5)	75(1.7)	104(4.3)	3(1.3)	4(1.7)	125(5.2)	372(3.6)	(8.7)
other	34(4.1)	270(6.3)	108(4.5)	12(5.1)	19(8.3)	96(3.9)	539(5.1)	
Tot.	812(100)	4329(100)	2404(100)	237(100)	230(100)	2418(100)	10430(100)	(100)

20%. Except for a very high percentage of interjections (11.9%), Maria seems to be the informant whose numbers are closest to the Swedish percentage numbers.

Thus, despite differences between IS and NS, it is apparent that all informants, even those who speak very little Swedish, use words from all word-classes.

In the table, the group 'Other' consists of interrupted or uninterpretable words.

Number of types

From table 3 below one can see how many different words (types) each informant uses within each word-class, and the percentages for each word-class in the vocabulary. Numbers to the far right represent total occurrences for the whole group. (Since many words are used by more than one informant, these figures cannot be the sum of the figures calculated for each informant.) There are no corresponding Swedish figures to compare with, but it seems quite evident that the vocabulary of all the informants is very meager. We see, for example that the largest word-class for all the informants except Nikolaos is the noun class. For many of the informants, nouns are used twice or even three times as much as verbs. Also, even though content words are many (as is the case in all natural languages) there are a number of function words in the material. Prepositions, for instance, are represented by at least three different words in the speech of all informants, even those who have a very small vocabulary.

One probable explanation regarding the fact that content words are represented in a much higher percentage in Immigrant Swedish than in Native Swedish is that the immigrant repeats himself quite frequently. (For a discussion of this, see Kotsinas 1982a or 1983b.)

Table 3. Number of types

	Ge	Di	Ta	Ka	Ni	Na	Tot.
Nouns	50(25.5)	157(41.2)	116(36.5)	28(27.7)	21(22.3)	103(28.6)	275(38.2)
verbs	38(19.4)	51(13.4)	59(18.5)	17(16.8)	24(25.5)	59(16.4)	114(15.8)
aux.	5(2.5)	5(1.3)	5(1.6)	1(1.0)	1(1.1)	5(1.4)	8(1.1)
adj.	12(6.1)	30(7.9)	19(6.0)	12(11.9)	8(8.5)	41(11.4)	76(10.6)
adv.	24(12.2)	30(7.9)	34(10.7)	15(14.8)	11(11.7)	58(16.1)	82(11.4)
pron.	31(15.8)	24(6.3)	31(9.7)	9(8.9)	9(9.6)	40(11.1)	50(6.9)
interj.	7(3.6)	23(6.0)	10(3.1)	7(6.9)	5(5.3)	14(3.9)	28(3.9)
num.	4(7.1)	51(13.4)	30(9.4)	5(4.9)	9(9.6)	21(5.8)	63(8.8)
prep.	8(4.1)	4(1.0)	8(2.5)	4(4.0)	3(3.2)	10(2.8)	12(1.7)
ind.art.	1(0.5)	2(0.5)	1(0.3)	1(1.0)	1(1.1)	2(0.5)	2(0.3)
conj.	6(3.1)	4(1.0)	5(1.6)	2(1.9)	2(2.1)	7(2.0)	9(1.2)
tot.	196(100)	381(100)	318(100)	101(100)	94(100)	360(100)	719(100)

Frequently occurring words

Words can occur frequently in a material like this for two reasons: either they are used by all or almost all the informants, or are used in many tokens (by all or only a few informants). Table 4 shows the 100 most frequent words in the material with regard to the number of tokens. It is evident that the most frequently occurring words are also those used by most of the informants.

Of the 25 most frequently occurring words in the list, 23 are used by 5 or 6 informants. Only 2 are used by 4 speakers, and no word is used by less than 4 speakers. Words used in less than 75 tokens in the whole material (rank nr 25 and higher) seem to be more likely to be used by less than 6 informants, and the less frequent a word is, the more possible it seems that it is not used by all informants. Words used in only a few tokens are used mostly by one single informant.

There are no word frequency lists for spoken Swedish to compare this material to. Instead, I have made a comparison between my material and a frequency dictionary of written Swedish, the so called Tiotusen i topp (Top Ten Thousand, Allén 1972, abbr. TTT). This dictionary is based on a comprehensive investigation of present-day Swedish newspaper texts (about one million words). Most of the texts are reports from foreign correspondents, articles on cultural subjects and general news reports.

Table 4. Top 100 in Immigrant Swedish

Rank order	Nr of inf.	Nr of tokens	Rank order	Nr of inf.	Nr of tokens
1. inte (not)	6	459	11. mycket (very)	6	124
2. det (it, neutr.g.)	5	413	12. men (but)	5	119
3. på (on)	6	332	13. i (in)	5	116
4. ja (yes)	6	325	14. du (you)	5	111
5. jag (I)	6	325	15. och (and)	5	108
6. den (it)	4	281	16. kanske (maybe)	4	103
7. komma (come)	6	234	17. bra (good)	6	101
8. nej (no)	6	186	18. förstå (understand)	6	100
9. vara (be)	5	177	19. varför (why)	6	94
10. en (a, one)	6	142	20. med (with)	6	91

Rank order		Nr of inf.	Nr of tokens
21.	lite (little)	6	82
	också (too)	5	82
23.	vad (what)	5	80
24.	eller (or)	5	76
25.	va (what? interj.)	5	74
26.	veta (know)	6	73
	han (he)	5	73
28.	kallas (be called)	5	71
29.	timme (hour)	4	67
30.	bara (only)	6	66
31.	jobba (work)	3	65
32.	skriva (write)	5	61
33.	svenska (Swedish)	6	60
	dag (day)	4	60
35.	år (year)	6	59
	mig (me)	6	59
	måste (must)	5	59
38.	finnas (exist)	4	58
39.	varje (every)	6	55
	samma (same)	5	55
41.	här (here)	5	52
42.	problem (problem)	5	51
43.	till (to)	6	50
44.	två (two)	5	48
45.	tro (believe)	2	45
46.	vi (we)	3	44
47.	flicka (girl)	5	43
48.	min (my)	6	42
	klockan (clock)	5	42
	spela (play)	5	42
51.	så (so)	3	41
52.	all (all)	5	39
53.	till exempel (for example)	4	38
	säga (say)	3	38
55.	ha (have)	2	37
56.	läsa (read)	5	36
	annan (other)	4	36
	tre (three)	4	36
59.	hjälpa (help)	3	35
	skola (school)	3	35
61.	gång (time, nr of)	5	34
	hemma (at home)	4	34
	ska (will)	4	34
	betala (pay)	3	34
65.	gå (go)	4	33
	oj (oh)	3	33
67.	fru (wife)	4	32
	sex (six)	4	32
	fråga (ask)	4	32
	stanna (stay)	3	32
	att (that, conj.)	2	32
72.	pojke (boy)	6	31
73.	månad (month)	6	29
	absolut (absolutely)	1	29
75.	vänta (wait)	5	28
76.	nu (now)	5	27
	fem (five)	4	27
	stor (big)	4	27
	prata (talk)	3	27
	de (they)	2	27
	okej (OK)	2	27
82.	svår (difficult)	5	26
	många (many)	4	26
83.	titta (look)	4	25
	köra (drive)	3	25
	pengar (money)	3	25
87.	tio (ten)	6	24
	hon (she)	5	24
	maskin (machine)	2	24
	alls (at all)	1	24
92.	fyra (four)	5	22
	idag (today)	5	22
94.	igår (yesterday)	5	21
	liten (small)	4	21
	vill (want)	4	21
	krona (Sw. money)	2	21
	säker (sure)	2	21
99.	man (man)	5	20
	gammal (old)	4	20

One would not expect any major similarities between two so different types of language as the Swedish spoken by immigrants with a very poor command of the language and newspaper-articles of the sort described above, but surprisingly enough, there seem to be some rather striking similarities.

When comparing the list in table 4 with the Top Ten Thousand, one finds that 87 of the most frequent words in Immigrant Swedish are among the 1000 most frequent words in the TTT. Another 8 words in the IS-list occur among the next 3000 most frequent words in the TTT. Looking at the whole IS-material (719 lexical items), one finds that 88% of these words occur in the TTT, i.e. among the 10,000 most common words in written Swedish.

I have also compared the two materials with regard to the words that are most frequent in each word-class. Looking at the 20 most frequently occurring nouns, one finds that 5 words occur in both materials (words meaning 'day', 'year', 'problem', 'time' and 'man'). The rest of these nouns seem mainly to denote persons and time in both of the lists. Among the 20 most frequently occurring verbs, 8 words occur in both materials (meaning 'come', 'be', 'know', 'must', 'have', 'say', 'will' and 'go').

As for the most frequently occurring prepositions, one finds that the two lists are very similar, with words meaning 'on', 'in', 'with', 'to' and 'from' appearing at the top. The same holds true for conjunctions with words meaning 'but', 'and', 'or', 'if', 'that' and 'when'.

On the other hand adjectives, adverbs, pronouns and interjections do not correspond much in the two lists (although there are words that appear in both lists even here). This might be due to the differences between spoken and written language. Interjections, for example, hardly ever occur in newspaper articles, but are very frequent in Immigrant Swedish.

The six informants have roughly the same kind of vocabulary. The two informants who have the smallest vocabulary, Nikolaos and Katarina (about 100 words each), use mainly those words that are the most frequent in Immigrant Swedish, which in turn would mean that most of the words they use are among the most frequent words in Swedish. None of the informants deviate strongly from the others regarding the kind of words he uses. This of course could be due to the fact that they all have more or less the same types of experience in day to day life in Sweden; they meet the same kind of people and use the same kinds of words in their work. Not even the Polish informant deviates much from the others, although in many respects she seems to have come further in the learning process.

Uncommon words

12% of the IS-words do not occur among the 10,000 most frequent words in the TTT. Does that mean that these words are uncommon in Swedish? Looking at some examples, we find words like the following:

Nouns: *gangster* (gangster), *marmelad* (marmalade), *pannkaka* (pancake), *salami* (salami), *vodka* (vodka), *kafeteria* (cafeteria), *orm* (snake), *smuts* (dirt), *grammatik* (grammar), *grekiska* (greek), *pdsk* (Easter), *immigrant* (immigrant), *skatt* (tax), *städare* cleaning personnel)
Verbs: *knacka* (knock), *skura* (scrub), *diska* (wash dishes), *tanka* (fill up gasoline), *tystna* (bekome silent)
Adjectives: *turkisk* (Turkish)
Interjections: *hej* (hallo), *varsdgod* (please)

These words all are everyday words that rarely occur in newspaper articles of the sort described above, but that possibly are frequent in the spoken Swedish that the informants meet with.

On the learning of words

A material like the one described in this paper is not appropriate if one wishes to study strategies of learning. To do this, one would need either a systematic study over a certain time or some kind of tests. Several observations can however be made, especially if one is interested in looking at the type of lexical elements which result from informal learning. Material of this type can also be used as a basis for a discussion of linguistic and pragmatic factors that may influence the learning of words by learners with low education, a limited experience of studying, and little contact with the target language.

As a starting point for the discussion I shall assume that there is a connection between the occurrence of certain words in the material and the 'learnability' of these words. This would mean that words used by most of the informants, as well as those used in many tokens, tend to be learned earlier than words occurring in a small amount of tokens or those used by only one or two informants. Such a connection should not be looked upon as being universal, as it may be valid mainly for the informants described here. On the other hand, it may be possible to apply certain aspects of this generalization to learners other than the ones described here.

In the following, three factors which are thought to be important in the process of learning will be discussed: input frequency, complexity and communicative need.

Input frequency

Is the larning of certain lexical items facilitated by the frequency of these words in the target language? I.e. does the learner learn words that he often hears more easily than he learns other, less frequently heard words?

An immigrant who does not go to courses to learn his host country's language immediately upon arrival in the new country, receives, just like the little child learning his first language, an input of the new language mainly in the form of:

a) Language that is addressed directly to him and
b) Language that is spoken around him but not directed to him. This 'overheard' language can be either target-language speakers' conversations which the learner himself does not participate in, or the language that he hears on radio and television.

An adult immigrant may also get linguistic input from reading. Of course this presupposes that the person in question knows how to read, and also that his own alphabet does not differ too much from the one used in the new country.

The Greek and the Latin-Swedish alphabet differ significantly, and none of the Greek informants in this study could be said to be able to read Swedish easily. Katarina did not know the Swedish letters at all, although she knew how to read Greek. No one ever read Swedish newspapers or books. The Polish informant, for whom athe alphabet presented no difficulties, claimed to read a Swedish newspaper every day. It is therefore apparent that language input for the Greek informants almost exclusively consisted of spoken language, whereas the Polish informant also got written input. But spoken language, even for her, must have been the main source of input.

Ferguson has pointed out (1977:28) that a target-language speaker talking to an immigrant often adapts his language in a way that makes it easy for the learner to comprehend. This 'adaptation' often consists of the use of short sentences, repetition of words to indicate intensity, omission of copula, articles, pronoun subjects and inflectional endings, and so on. This variety of speech has been dubbed 'Foreigner Talk' by Ferguson. 'Foreigner Talk' shows great similarities to 'Baby Talk' (the type of speech which has been observed to be used by adults talking to children, and which is supposed to direct the child's attention to certain linguistic structures and increase understanding).

The other type of input, where the learner does not participate in the communicative act, e.g. TV-programs, conversations between target-language speakers which the learner overhears, written texts, and so on, are undoubtedly at all linguistic levels more complex than the former type.

As mentioned above, the Greek informants seem to have had limited opportunities for linguistic interaction with Swedes in all contexts other than rather official matters. The Polish informant, being married to a Swede, must have had much better possibilities for contact with Swedish-speaking people. As for the 'overheard' conversations, all informants were surrounded by people passing the rooms and corridors where they cleaned, and these people were presumably often engaged in conversations that the informants heard, at least in parts. In the informants' homes, like in most Swedish homes, TV was on during most of the evenings.

The amount of Swedish language input directed at the Greek informants thus seems to have been rather small. 'Overheard' input, however, was much greater, and was more or less equivalent to the amount of 'overheard input' received daily by most native adult Swedes.

To what extent then is the informants' acquisition of vocabulary affected by the quality of input?

Cazden, who (1972:104) discusses how the two different types of input mentioned above affect the child's learning of lexical items, demonstrates that there is a correlation between the frequency of certain linguistic structures in the child's environment and the order of their acquisition. He states however that frequency is not the only important factor. Even a low frequency of a particular linguistic trait may result in learning in cases where the utterances are directed to the child in active interactional situations. Cazden points out that the language that the child listens to on television certainly consists of wellformed sentences, but that it differs from the language used in face-to-face conversation. One of the differences is that language heard on television comes in a highly non-distinctive form, and is simultaneously accompanied by attention-grabbing visual stimuli.

Furthermore, according to Cazden (1972:111), frequency cannot be distinguished from semantic or syntactic complexity. Well-formed sentences that the child can understand and which are uttered in situations where the child is an interactor thus give the most favourable input with regard to learning.

If the same conditions exist for adult learners, this would mean that the language that the immigrant hears at work and on TV and radio influences learning to only a very small extent, while interaction with target language speakers is of considerably greater importance.

We have seen that almost 90% of the words used by the informants also belong to the most frequently occurring words in written, and possibly even in spoken Swedish. Words frequently used in the target language obviously tend to be learned early.

The remaining 10% of the words, which do not occur in the frequency-list of newspaper-language, and probably seldom occur in the input that the learner receives from TV or even in overheard conversations, may nevertheless be relatively frequent in the language that is directed to the learner. These words are often connected to the interactional situations that the immigrant finds himself in.

It thus seems that the informants, even those who have a very restricted vocabulary, have learned two types of words: a) those that are common in all types of Swedish, written as well as spoken, and b) words typical to the situations wherein the informants generally use Swedish.

Complexity

It seems natural to assume that in all kinds of language learning, those items that from the learner's point of view seem simple are learnt before those which seem more complex. Factors such as similarity to mother tongue words, length of words, semantic complexity, and abstractness and concreteness could be expected to influence the order of acquisition, especially in an informal learning situation.

The words that normally should be the easiest to learn are obviously those which have some kind of resemblance to L_1 words. In this material certain informants use a comparatively large amount of words that have an equivalent in the native language and which sound more or less the same. These words are mainly nouns. About 50% of Katarina's nouns and about 40% of Dimitris's nouns have direct counterparts in Greek. The Polish informant also uses many such words. Most of these words are more or less international, often of Greek origin. Here follow a few examples.

Swedish	Polish	Swedish	Greek
advokat	adwokat	alfabet	alfávito
analfabet (=illiterate)	analfabeta	bebis (=baby)	bébis
		bensin	venzíni
alkoholism	alkoholism	cigarrett	tsigáro
datum	data	demokrati	dimokratía
glob (=globe)	globus	familj	famílja
garage	garaż	kanal	kanáli
grad	grad	klimat	klíma
handla (=buy)	handlować	lexikon	lexikó
studera (=study)	studiować	maffia	mafía

Sometimes such words are used in a form directly transferred from the native language, and sometimes they are adapted phonologically and morphologically to Swedish. The use of such words, common for both the native and the target language, means that the learner does not have to learn new target language lexical items for concepts that have direct equivalents in the native language. He has only to learn that these words exist in the target language as well as in the native language. Corder has called this the 'borrowability' of words.

> 'Successful borrowing', that is when a 'borrowed' item is 'accepted' by the interlocutor as 'well formed' in the target language, may lead to that item being incorporated into the speaker's interlanguage repertoir. This could be regarded as learning. Corder (1981:104)

Kellerman (quoted in Hyltenstam 1978:80) distinguishes language specific elements from language neutral elements in an arbitrary pair of languages. This means that those elements that seem compatible to the learner are language neutral, but that those elements that the learner would not find adequate for use in both languages are language specific. In my material it seems to be the case that learners at an early stage of learning find the language neutral elements and use them. It even seems that the learner sometimes, once having found these words, feels that he knows how to express a certain communicative need. Consequently, he does not bother to learn other words that would be more adequate from the target language point of view, and instead 'over-uses' some of the language neutral words. Dimitris, for example, uses *gangster* whenever he wants to say that a person is in some way unpleasant, and *problem* when he wants to express that someting is 'bad'. Thus he avoids the use not only of synonymous nouns but also of a whole range of adjectives. These words 'block', so to speak, the learning of a whole spectre of Swedish words. (For a further discussion on 'lexical over-use', see Kotsinas 1983a.)

Another factor that probably has great importance for how easy or difficult a word seems to be to the learner is the length of the word. In my material most of the words are short and phonologically uncomplicated. Almost 80% of the 719 words consist of one or two syllables. The rest of the words are mostly uncomplicated verbs consisting of three syllables, or words transferred from the native language. In the list of the 100 most frequent words (table 4), only four words have more than six letters. None has more than seven letters. This of course is connected to the fact that common words in a language tend to be short.

A word that is both frequent in input, short and phonologically simple, may nevertheless be difficult to learn because of its semantic complexity. Herbert Clark claims (1973:29) that if two terms, A and B, are to be learned, A will normally be acquired before B, if B requires all the rules of application of A plus one or more in addition. Clark's discussion concerns child language and deals mainly with the learning of words for time and space, but the assumption may well be applicable to the acquisition of a second language. There is much evidence that words which, according to Clark, are semantically less complex appear in my material in more tokens and are used by more informants than words that are more complex. For example adverbs denoting position occur more often in the material than adverbs denoting position + direction. Prepositions denoting position + positive direction (to) occur more frequently than prepositions denoting negative direction (from). (For a further discussion see Kotsinas 1982b, 1982c, 1983a.)

Also connected to semantic complexity are over-extensions, frequent in both interlanguage and in child language. Eve Clark (1973:72) has pointed out that children often identify a certain word with the aid of one or two features, instead of with the whole combination of components or features. The child then uses these features to decide whether it is possible in a given context to use a certain word or not. This means that the child makes referential errors because he does not yet know the combinations of features that would otherwise permit him to delimit the categories.

It seems as if the adult learner in certain instances behaves in more or less the same way as a child, in the sense that he first discovers the most important features of a word and then uses this word for all the words within the semantic field where it belongs. This is for example the case with Dimitris, who uses the verb *fråga* (ask) to mean practically all words within the semantic field of 'verbal communication'. Thus *fråga* in certain contexts means 'tell', 'discuss', 'say', 'explain', 'talk' and the like. Likewise he uses *komma* (come) for 'come', 'go', 'travel', and even for 'begin', 'start', 'understand', etc., and *titta* (look) for both 'look' and 'see'. (See Kotsinas 1983a.) Over-extensions in my material seem to occur most frequently among verbs, adverbs and prepositions. This is in contrast to child language, where nouns often are over-extended. Over-extensions occur to different degrees in the speech of different informants.

It is sometimes assumed that a learner prefers concrete words to abstract ones. In my material a great deal of the nouns denote concrete objects and activities, but there are also many abstract nouns. These are often very common words, essential to communication, and they mostly denote time, economy etc. (for example words meaning 'hour', 'month', 'year', 'percentage', 'democracy' etc.). Regarding verbs, there are differences among the informants. Dimitris seems to have concentrated on learning verbs for rather concrete activities, while more abstract verbs that are used rather as form-words are rare in his vocabulary. To replace many of these more abstract verbs, he has worked out an aspectual system, with the aid of the three verbs *komma* (come), *stanna* (stay) and *stoppa* (stop), that shows many resemblances to aspectual systems in English-based creole languages. (See Kotsinas 1981a or 1981b.) Maria, on the other hand, has access to many verbs that are close to form-words.

Certain learners may concentrate on learning concrete words as opposed to the more abstract ones because a concrete word seems easier to learn, as it denotes something one can touch or demonstrate. It is easier to ask for the translation of such words by pointing or acting. Another reason for this could be that the learner's idea of language is that it is something which consists of a number of names for things. He wants to know these names, at the same time that he, especially if he is not familiar with grammar or with studies at all, does not consciously understand the value of knowing words that denote abstract concepts, relations, syntactic connections and so on. He may even consider these words to be subtleties that he will not have to learn, because he neither wants nor is able to learn the difficult foreign language perfectly. Finally, it may also be that the speaker, even in his mother tongue, has a rather concrete vocabulary, i.e. he uses certain concretizing strategies to discuss abstract concepts. It is evident that some of the informants, especially Dimitris, have worked out ways to replace more or less abstract expressions by concretizing strategies; using dialogues, numbers, proper names and so on. (See Kotsinas 1982c.)

It would, however, be completely wrong to state that the vocabulary in this material is mainly concrete. The form-words, as well as words denoting the speaker's attitudes and emotions, such as certain adverbs, verbs and nouns, cannot be looked upon as concrete words, and these represent a great part of the informants' vocabulary. It is also evident that different informants follow different patterns when learning new words. It seems for example that Dimitris prefers words for concrete objects and activities, while Maria is more inclined to learn abstract words as well as form-words.

Need for certain words

It is not only the case that the amount or nature of the words that the learner hears affects learning. The learner's need for certain words may be equally important. Three groups of words are distinguishable here: a) words connected with certain situations, where the speaker normally communicates in the target language, here called situationally important words, b) words that can be used to express the speaker's feelings, attitudes and evaluations, here called emotion words, and c) certain form-words.

As mentioned above, certain words, such as those connected with the speaker's work are likely to be more frequent in the input directed to the speaker than they generally are in the target language. For this reason these words are likely to be acquired early. But it also seems fair to assume that other words, not occurring frequently as input are judged by the learner to be important for him to learn. In this material, there are many nouns and also many verbs which concern subjects that are important to the speaker's everyday life. Examples of such words are words for food, economy, deixis etc., and words like *skatt* (tax), *försäkringskassa* (social security) and *sjukskriva* (report ill). These words are learned because the speaker needs them, and not because they are frequent in input.

Another type of word that the speaker might have a great need for and thus learn early, are words used to express emotions and attitudes, for example interjections (*oj* 'oh'), adverbs (*kanske* 'maybe', *just de* 'exactly', *absolut* 'absolutely', *inte alls* 'not at all'), adjectives (*bra* 'good', *svår* 'difficult', *normal* 'normal'), verbs (*måste* 'must', *kan* 'can', *ska* 'shall', *vill* 'want to') and nouns (*vän* 'friend', *problem* 'problem', *fel* 'mistake').

It is evident that the informants' vocabulary does not exclusively consist of words semantically loaded with connection to experiences and needs. A surprisingly great number of form-words are present in the informants' speech. Upon reading certain descriptions of 'immigrants' speech', one may get the impression that form-words are almost totally absent. Meisel, for example, states that articles, prepositions, copula and personal pronouns are 'missing elements' in German Gastarbeiterdeutsch (Meisel 1977:93).

It is indeed true that certain form-word categories, with regard to both tokens and types, are used to a lesser extent in Immigrant Swedish than in normal Native Swedish. This does not mean, however, that form-words are totally missing. Prepositions, for instance, even occur in a higher percentage of tokens in the material than they normally do in spoken Native Swedish. Not even those informants that could be said to know very little Swedish, Katarina and Nikolaos, quite lack auxiliaries, pronouns, articles, conjunctions or prepositions. This indicates that the need of function words is strong and that these words, in spite of the fact that they have a rather vague semantic meaning, still retain a role so important for communication that they are learnt comparatively early. As Brown & Bellugi point out:

> The meanings that are added ... by functors seem to be nothing less than the basic terms in which we construe reality.
>
> Quoted in Cazden (1972:129)

Marked and unmarked words

It has been suggested that a theory of markedness could explain why certain items or constructions are learned earlier than others. Hyltenstam (1978: 75) suggests the following hypotheses:

H:1) The initial stages of interlanguage are characterized by unmarked categories
H:2) Development towards a given target is achieved from unmarked to marked categories

If in 'unmarked categories' one includes such items that a) are frequent in the target language, b) to the learner seem simple to use, and c) also correspond to fundamental needs of expression, then the hypotheses are supported by my material. It is apparent that situations sometimes occur where these three factors compete, so that words that normally are to be looked upon as complex or uncommon nevertheless are learned because they are needed for a certain purpose. From this follows that one cannot make up lists of words that are frequent and simple and assume that these words are to be taught at early stages of language acquisition. Unless the learner really needs a certain word, it will be difficult for him to learn it, because he will avoid loading his memory with 'unnecessary' stuff.

On the other hand, when the learner has a strong need to communicate, he will use almost any lexical material to fulfil this need.

Strategies of learning

As previously stated, the material presented here is not suitable for investigating how the learning of vocabulary is technically achieved, i.e. which strategies a learner more or less consciously uses to apprehend or memorize lexical items. There are, however, a few suggestions that can be made concerning strategies of learning.

Corder proposes that the learner may sometimes acquire a structure as a holophrase and produce it on the appropriate occasion and without knowing the rules for generating that structure (Corder 1975:127).

In my material there are quite a few phrases and constructions that may well have been learned as 'whole chunks' without the learner being conscious of the function or meaning of the different elements, or without his being able to use them in other contexts. Some of these chunks are idiomatic phrases. Others are groups of words that often occur together in the same kind of contexts, without necessarily being looked upon as lexicalized items. An example of the first type is: *det spelar ingen roll* (it doesn't matter, lit. it does not play any role). An example fo the second type is: *Hur mår du? Bra*? (How are you, how do you feel? Fine?). Dimitris often uses the second phrase, always in the same way, without any variation and, it seems, without expecting any answer. It appears that he uses it as some sort of polite greeting, not being able to analyze the different parts of it. He never uses *hur* (how) or *mår* (feel) in other contexts. Takis very often uses *de e* (it is) or *den e* (it is) at the beginning of a sentence. He uses the phrase as if it were some kind of starting-point for the sentence without any particular semantic content of its own. Likewise *är det*? (is it?) seems to be a question marker rather than verb-subject of the sentence. Other more or less stereotyped combinations of words are *här inne* (in here), *där nere* (down there), *gå ut* (go out), *komma in* (come in), *gå upp* (go up), *go ner* (go down), *du vet* (you know), *förstår du mig*? (do you understand me?). The words *inne, nere, ut, in, upp, ner* are never used in other contexts.

Another strategy of learning that can be discerned in the material is what I call copying, viz. certain words or phrases are used by a certain informant only directly after the same word or phrase has been used by one of the other informants or by the teacher. Dimitris for example, normally uses *komma* (come) to denote all kinds of motion ('come', 'go', 'travel', 'run' etc.). In a total of 109 examples, he uses *komma* in all but four instances (where he uses *gå* (go) instead). He uses *gå* correctly, but does so directly after he has just heard someone else use the verb. Only twice does he use the verb *gå* in 'free production'. This would mean that *gå* exists as a more or less passive bit of knowledge in his mind, but that he does not dare to use it unless he has heard the word being used by someone else in a context where he understands it. The two cases where he uses the word without its being present in the situation could indicate that he is slowly beginning to risk using this word instead of the more familiar *komma,* which he normally uses also when he means 'go, 'leave'.

It seems plausible to assume that at least some lexical items are introduced into the speaker's vocabulary first as parts of more or less stereotyped chunks, and that they later become 'emancipated' when the learner starts to use them out of their 'usual' context.

Other factors that affect the learning of lexical items

The factors discussed above concerning the acquisition of vocabulary are all more or less connected to the linguistic situation. It is of course clear that non-linguistic factors also steer the process of acquisition. These factors possibly account for the well-known fact that some learners go on learning until they reach a competence that is very near to the native speaker's, while others seem to cease at a certain stage and fossilize there. Naturally factors such as motivation, education, contact with target language speakers, attitudes to the new country, personality etc. are of great importance. These factors are not directly investigated in this study but they can be inferred. Conversely, age and length of stay in the host-country do not seem to have as great an importance as the factors mentioned above. Maria was 46 years old when she immigrated, but has a much larger vocabulary than Nikolaos, who immigrated at the age 23 and who, like Maria, had spent 3 years in Sweden. Maria's vocabulary seems to be about the same size as Dimitris's, but in many respects her language is closer to native Swedish than Dimitris's, even though he was 35 years old upon immigration, and had been in Sweden three times as long. One can also postulate that Maria will go on learning at all linguistic levels, while Dimitris will more or less stay at the stage where he is now, with the exception that he will learn a few more lexical items.

Summary

In this paper, the kinds of words a learner acquires in an informal learning situation have been discussed. Simple and common words form the main part of the vocabulary of the informants. The following factors operate in the process of learning:

1. Frequency of input words
    a) Frequency of words in the target language
    b) Frequency of words in situations where the learner usually interacts linguistically

2. Complexity
    a) Similarity to native language words
    b) Length of words
    c) Semantic compexity
    d) Degree of concreteness or abstractness

3. Communicative need of certain words
    a) Words connected to the situation where the learner uses the target language
    b) Words expressing emotions and attitudes
    c) Form-words

Although a material such as this, consisting as it does of spontaneous utterances, cannot be used to investigate all strategies of learning, it is possible to draw some inferences concerning these strategies. The following strategies are discussed and exemplified:

1. The learning of 'whole chunks'
2. The learning of words occurring in certain contexts
3. Copying

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ACCEPTABILITY AND AMBIGUITY IN NATIVE AND SECOND LANGUAGE MESSAGE PROCESSING

Introduction

The evaluation and testing of the cognitive processes related to the use of second and foreign languages are possible only if we know what is the nature of the knowledge which is in operation during the processes of fluent native language production and perception. Unfortunately, very little is known of such cognitive processes; existing theories and hypotheses are often contradictory, and they typically represent only a partial explanation of the entire processes of language production and language reception. Therefore, any discussion of these phenomena today is to be regarded as a preliminary and rather subjective synthesis of some of the phenomena involved offering a tentative explanation for the foreign language processing problems.

Such has also been the theoretical startingpoint for a series of psycholinguistic experiments and tests carried out within the Jyväskylä Finnish-English Cross-Language Project. The claims made in this context are highly hypothetical, and all of them have not yet been experimentally verified. It also goes without saying that all the views of the present writers on the topic cannot be discussed in detail here. Some of the views will be only very superficially touched upon; some may even be based on misunderstanding, and some may have been distorted when transferred from their original framework to a context which is no longer coherent with the original theory.

Contrastive psycholinguistics does not only aim at a parallel description of the processing modes of the speakers of the two languages; it is perhaps even more important to study the interaction of various processing modes in the linguistic processing by a foreign language student as compared to those of the native speaker. Knowledge of the actual ways of processing has important implications for the theories about foreign language learning and teaching.

A look at recent models and theories of reading and speech perception implies the existence of a model in which speech perception is described in terms of a complex interaction between bottom-up, input-driven processes and top-down, knowledge-driven ones, ie. analytical and mnemonic processes (see eg. Cole and Jakimik 1980, Grosjean 1980, Marslen-Wilson and Tyler 1981). What is perceived as a result of these processes can be described as a joint function of what is seen and/or heard and what is known and believed. This notion serves as a startingpoint for the present psycholinguistic analysis. The foreign language student cannot be helped in his foreign language processing difficulties before it is found out (1) what the student knows, (2) what he hears, and (3) how he applies these two sources of information in language processing, ie. what he attempts to hear. An important parameter of the phenomena involved is the fact that the processes of language production and language reception take place in real time, which necessarily involves certain serial and consecutive procedures. One of the questions that remain open to date is that of the relative order of various events of recognition and interpretation. There are certain indications of the fact, moreover, that "the processing patterns observed reflect not the operation of specialized language processes, but rather the operation of more general perceptual and cognitive strategies" (Grosjean and Lane 1981:207). This implies that too strict an adherence to linguistic processes alone may prove out to be destructive for the purposes of the study of psycholinguistic processing.

The reaction time test

As is quite well known (see, eg., Sajavaara and Lehtonen1980), one of the greatest problems in cross-language communication analysis is the planning of the experimentation necessary for the study of the relevant processes and strategies. We lack the means to interfere in the processes in a way which would be powerful enough to bring up parameters effective at various processing stages in the cross-language communication speech channel.

The Finnish-English Cross-Language Project has made an attempt to apply certain methodologies used in psychology and psycholinguistics to the study of a bilingual speaker's speech behaviour in his mother tongue and his second language as contrasted to that of a native speaker of the second language concerned. These experimental methodologies have been used to supplement the data which has been gathered by means of more traditional techniques used in applied studies. However, it is to be admitted that these methodologies offer a means to give certain highly tentative explanations, and the major problem still exists of how to approach the analysis of processes.

The methods with which the project has experimented are various applications of the shadowing technique, reaction time tests, tests with distorted speech stimuli, and the gating paradigm (cf. Grosjean 1980). For this paper, only some of the results of the reaction time applications have been available. In current psycholinguistics, reaction time measurements are no longer an exotic research tool; today they may be more in evidence than ever, since they have proved to be valuable in isolating mental subsystems and various psychological 'pathways' (cf. Lachman et al. 1979: 181ff.). The interpretation of the data in the present paper in the light of the model of message processing developed in Jyväskylä (see Figure 3 and Sajavaara and Lehtonen 1980) will be partial and, as is obvious, highly tentative (for more details of data and a more extensive analysis, see Havia 1982).

The application of reaction time testing methodology in a contrastive framework is based on the simple hypothesis that the foreign language student needs more time for all kinds of processing when using the foreign language than the native speaker does, and the difference in processing time is expected to be reflected in the time latencies found in the error detection tasks of the experiment reported here.

Tables 1 and 2 summarize the results of two of the tests carried out in this context. The tests were called the Simple Auditory Test (SAT) and the Auditory Monitoring Test (AMT). The tests were primarily concerned with different uses of the English article. The Simple Auditory Test was administered to twenty Finnish learners of English and to eight native speakers; ten of the Finns and four of the natives were then subjected to the Auditory Monitoring Test.

In the Simple Auditory Test the subjects were presented 22 sentences (see Table 1). Fifteen of the sentences involve different instances of English article usage divided in three categories (the generic uses of the article, the specific definite article before nouns specified by a modifier, and the specific indefinite article); seven of the sentences are to be considered grammatically

Table 1. The acceptability judgements by the native and non-native speakers and the native and non-native reaction times for the sentences in the Simple Auditory Test ($\bar{x}$ = the mean of the reaction times in msec, s = the standard deviation of the RTs in msec; the statistical significance of the differences between the means of the two subject groups is indicated as follows: +++ = very significant, p <.001, ++ = significant, p <.01, and + = almost significant, p <.05). From Havia 1982:63.

I LEARNERS (N=20)				II NATIVE SPEAKERS (N=8)				significance of the difference between I & II	Sentence no.
judgments		RTs (msec)		judgments		RTs (msec)			
yes	no	$\bar{x}$	s	yes	no	$\bar{x}$	s		
17	3	1595	1003	7	1	1166	224		1. I find modern Finnish design very exciting.
17	3	1846	701	5	3	1629	914		2. Ann has less friends than Jane.
12	8	2748	1148	1	7	1916	705	+	3. Beer we drank yesterday was sour.
17	3	1759	897	8	-	642	367	++	4. There was a rope lying on the ground.
19	1	1460	795	8	-	833	458	+	5. The relationship between them had come to an end.
10	10	2508	814	2	6	2253	1145		6. There's the new boy in our class.
16	4	1241	904	8	-	670	403		7. Jeff has finally given up smoking.
8	12	2318	984	2	6	1615	755		8. I would certainly help you if I would have more money
5	15	2405	1023	-	8	1710	713	+	9. A tiger is numerous in these parts.
12	8	1875	732	-	8	1168	691	+	10. Records on the table are mine.
20	-	1473	956	8	-	870	600		11. The eagle is rapidly disappearing from this continent.
6	14	2364	793	1	7	1493	549	++	12. We had to wait a long time to the train.
11	9	2890	785	3	5	2070	898	+	13. The luck has always been on his side.
16	4	1743	1040	8	-	597	243	++	14. I gave John a book for his birthday.
3	17	2403	779	-	8	924	318	+++	15. John's money were all gone.
15	4	2907	1619	6	1	1856	1464		16. The Australian is often tall.
14	6	2387	1229	5	1	1807	726		17. I saw very good film last night.
12	8	1906	900	-	8	917	713	++	18. Nothing is known about fate of the party.
13	7	1968	1307	8	-	1145	716		19. There's the new boy in our class.
19	1	1839	1132	8	-	762	353	++	20. The fear he felt was something quite new.
6	14	2760	1014	-	8	1769	700	++	21. I have seen never anything like that before.
5	15	2805	1184	-	7	1565	789	++	22. Now John dates the prettier girl than Sue.

unacceptable. In addition, there are seven sentences which serve as distractors to divert the subjects' attention from problems of article usage. The test sentences were presented to the subjects in a random order, and the subjects were asked to push a *no* button as soon as they had decided that the sentence was unacceptable, or a *yes* button if they decided that it was acceptable. The purpose of the test was twofold: (1) to give information about the subjects' judgements on the acceptability of the sentences, and (2) to give information of the time that it took for the subjects to make their decisions. The subjects were also asked for the reason why they judged the sentences unacceptable whenever they did so.

The Auditory Monitoring Test consisted of 12 test sentences, which all involved instances of article usage divided in the three groups mentioned above. Four of the sentences represented each one of the three groups, two being acceptable, two unacceptable. The subjects of this test were told before the test that the test sentences might contain instances of unacceptable article usage; otherwise the administration of the test did not differ from that of the Simple Auditory Test.

Figures 1 and 2 represent the results of the two reaction time tests. In the figures, the test sentences are arranged in the order of the Finnish subjests' reaction time lengths, and the earliest time at which the possible error in the sentence could potentially be detected hypothetically has been marked by means of an arrow.

The length of the sentences did not have a marked effect on the reactions. In the SAT, the correlation between the reaction times and the lengths of the sentences was -.05 for the Finnish subjects and -.09 for the native speakers, and in the AMT, the corresponding coefficients were .49 and -.26. The only positive correlation, that of the Finns for the AMT, can be explained as being due to the fact that a great number of the reaction times deviated markedly from the means.

The interrelationship between the length of the sentences and the hypothetical error detection point may also be of certain relevance for the assessment of the reaction time data. It could be predicted that – remembering that there is a certain latency for all reactions – the earlier the hypothetical detection point is the closer to the end of the sentence also the actual reaction to the sentence cue. This assumption is based on the hypothesis that the interpretation of the sentence proceeds, at least in part, lineally with the

Table 2. The acceptability judgements by the native and non-native speakers and the native and non-native reaction times for the sentences in the Auditory Monitoring Test ($\bar{x}$ = the mean of the reaction times in msec, s = the standard deviation of the RTs in msec; the statistical significance of the differences between the means of the two subject groups is indicated as follows: +++ = very significant, $p < .001$, ++ = significant, $p < .01$, and + = almost significant, $p < .05$). From Havia 1982:75.

I LEARNERS (N=10)				II NATIVE SPEAKERS (N=4)				significance of the difference between I & II	Sentence no.
judgments		RTs (msec)		judgments		RTs (msec)			
yes	no	$\bar{x}$	s	yes	no	$\bar{x}$	s		
1	9	1016	583	2	2	1556	1511		1. My favourite drink is the wine.
8	2	1468	839	4	-	916	723		2. He is studying the history of English.
10	-	1054	776	4	-	488	219		3. The books Jim gave me were interesting.
1	9	2497	1489	2	2	2081	1815		4. There was the accident in the street.
5	5	3336	1186	-	4	2090	665	+	5. A lion is found widely in many parts of Africa.
10	-	1584	600	4	-	578	283	++	6. Music is Tom's latest hobby.
1	9	1588	856	-	4	933	504		7. John has just read very interesting book.
1	9	3028	1103	1	3	2884	1442		8. Death of her friend came as a great shock.
9	1	1957	876	4	-	595	364	++	9. The aeroplane has made travelling a lot faster.
10	-	1512	392	4	-	676	335	++	10. Tom bought his wife a new hat.
1	9	1929	610	-	4	1350	818		11. Ink you gave me was red.
9	1	1887	657	4	-	614	291	++	12. There is a table over in the corner.

speech input. Therefore, the correlations were calculated between the reaction times and the sentence lengths minus the part of the sentence that figured before the predicted decision point. In the SAT, the correlations were r = -.18 for the Finns and r = -.21 for the native speaker, and in the AMT, r = .3 and r = .38 respectively.

The weak positive result of the AMT may be seen as an indication of the fact that the expectations as concerns the type of problem to be encountered in the sentences to be processed lengthen the reaction times as calculated from the ends of the sentences. These expectations make part of the information available in the data store for the top-down processing mode, and it seems that the time needed for this type of search is increased as a result of this information alone. Hypothetically, it could actually be expected that the result should be the other way round because the subjects were aware of the type of problem that was to be expected.

Native vs. non-native reactions

For the most part, the reactions of the Finnish subjects were similar to those of the native speakers, although there were some notable exceptions. The native speakers made judgements more quickly, and in the AMT the reaction times were clearly shorter than in the SAT. It seems that in their reactions the native speakers generally relied on automatic decisions and the amount of monitoring was low, while the Finnish subjects may not have developed similar operational schemata and had to resort to conscious problem-solving strategies. The native speakers responded 810 milliseconds faster on an average in the SAT and 675 milliseconds faster in the AMT. The difference of the means between the two groups is not, however, statistically significant in all of the instances.

The difference between the means of the native and non-native responses was statistically very significant ($p < .001$) for one sentence only. It was sentence 15 in the SAT (* *John's money were all gone*). As many as 17 out of the 20 Finnish subjects found the sentence to be unacceptable (and for the right reason), but it seems that this decision required a great deal of monitoring, which lengthened the reaction times (the reaction times were 2403 msec for the students but 924 msec for the natives). In the SAT there were seven

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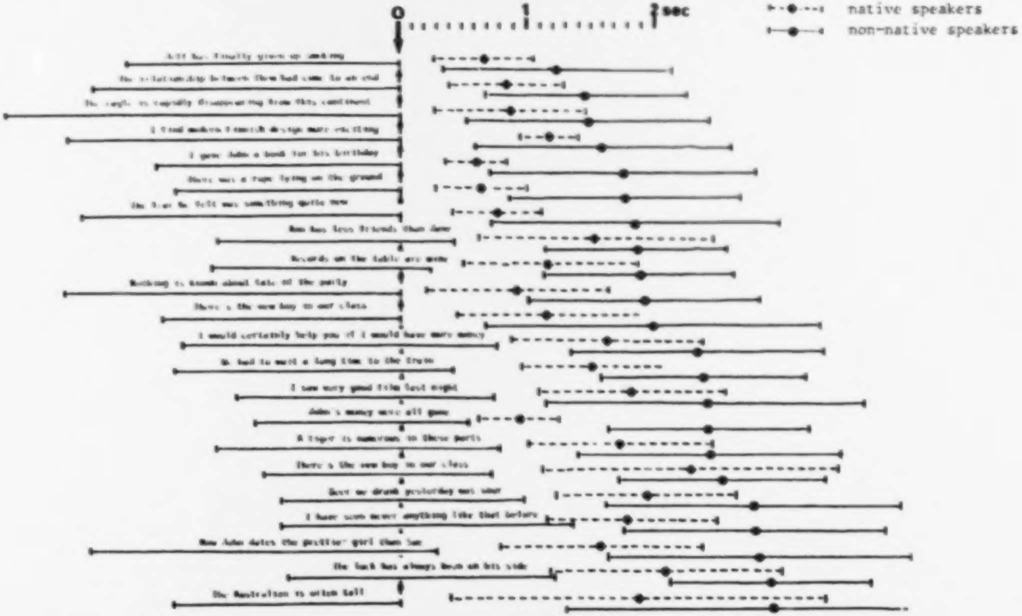
Fig. 1. The test sentences of the Simple Auditory Test (SAT) arranged in terms of the durations of the Finnish subjects' reaction times (RT). The lines under each sentence stand for the actual duration of the sentences. The predicted acceptability decision points are indicated by means of arrows within the sentences or at the end of them. The means and standard deviations of the natives are indicated by means of square dots and dotted lines, and those of the Finnish students by means of round dots and continuous lines.



sentences, and in the AMT four sentences, for which the difference between the means of the reaction times of the two groups was significant at the .01 level. A reaction time that may be two to three times longer than that of the native speakers does not mean that the non-native speakers arrive at mixed results in judging the acceptability of the sentences. For instance, sentences 4, 14, and 20 of the SAT were judged almost unanimously acceptable after reaction times which were three times longer than those of the natives.

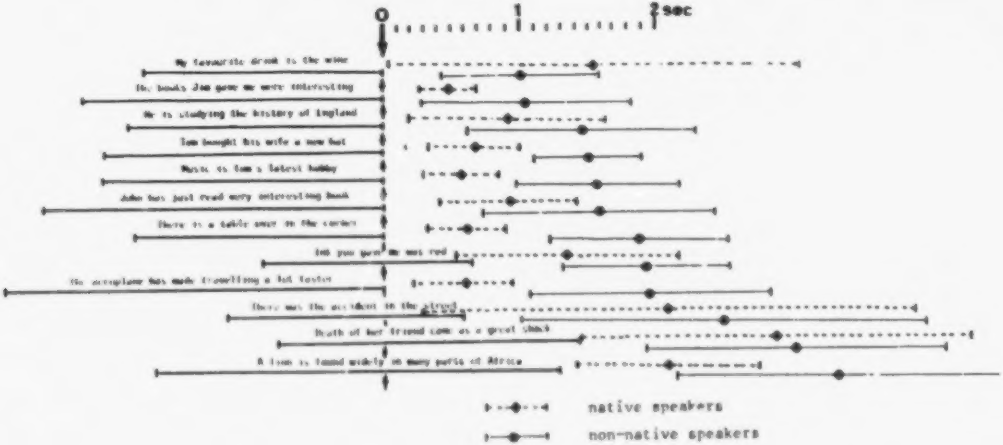
There were clear differences between individual Finnish subjects, which can at least partly be interpreted as being due to differences in the subjects' English language proficiency (cf. Vellutino's distinction between skilled and less skilled readers, see Vellutino 1982:79). More proficient students responded to the test sentences faster because they had more automatized, implicit knowledge about the language. Yet Havia (1982) was able to point out that reaction time tests are no reliable test of language proficiency, which seems to indicate that some part of the variation in the non-native reaction has to be explained on the basis of individual differences in the use of the monitoring mode. There were also instances of the Finnish subjects not being able to make anything out of the sentences included in the test.

In some earlier studies concerned with the use of the English by Finnish students of English, a hierarchy of difficulty has been established on the basis of errors made by the students (Herranen 1978). In a way, such a hierarchy could also be seen to represent learning difficulty. The reaction time tests reported here seem to indicate that a hierarchy of difficulty based on error analysis does not correlate with processing difficulty as reflected in the present tests.

For the present tests Herranen's hierarchy was divided into three categories (for further details see Havia 1982): easy, medium and difficult. If errors in the use of the articles also reflected difficulties in the processing of articles, the reaction times should be longer for items that can be specified as difficult.

In the reaction time tests, the 'medium' sentences had the shortest reaction times, while the 'easy' and 'difficult' were more or less equal and had longer reaction times. The present material is not extensive enough to make any far-reaching conclusions possible, but it seems that there is no significant difference between the three categories as to the extent to which they burden the listener's processing capacity. This also means that learning difficulty and

Fig. 2. The test sentences of the Auditory Monitoring Test (AMT) arranged in terms of the durations of the Finnish subjects' reaction times (RT). For the explanation of the symbols see Figure 1.



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processing difficulty cannot be equated. The hierarchy of difficulty as established on the basis of error analysis was not operative in the processing of the test sentences. Items learned early, ie. 'easy', and items learned late, ie. 'difficult', may involve processing capacity to an equal degree.

The results of the tests indicate, first of all, that there is a great deal of variation even in the native speaker judgements, which is to be expected on the basis of what is known about the research concerned with lexical access (see, eg., Vellutino 1982:177). In some cases, the differences in native speaker judgements can be explained as being due to mishearing or various types of slips, or to a process similar to that found in word recognition tests with items with missing elements (cf. Vellutino 1982:40ff.) – here only at the syntactic level – in that the listener tends to patch up defective strings with elements that have been missing with regard to the hearer's idea of the probable interpretation of the sentence (eg., sentences 3, 12, and 17 of the SAT). The hearer obviously expects the sentences he hears to be correct, as is normally the case in natural communicative interaction. In some cases, the natives obviously reacted to the test sentences under the influence of their experience with teaching Finnish learners of English (eg., sentence 2 in the SAT). Some of the differences between the native speakers clearly indicate that even some of the native speakers monitored their reactions, ie. they did not entirely rely on their native speaker 'intuitions'.

As a whole, the native speakers were much more unanimous in their decisions than the Finnish subjects. For the most part, when they disagreed in their judgements, the sentences were ambiguous, mainly in the sense that it was rather difficult to establish a potential context for them. The judgements of the Finnish subjects on the ambiguous sentences did not show much variation, whereas they disagreed strongly on sentences which, according to native speaker judgement, were clearly unacceptable (eg. sentences 3, 10, and 18 of the SAT).

It seems that for the sentences ambiguous to the natives the Finnish subjects were able to see one of the possible interpretations only, ie. the one which is more common or which relates to some 'basic' rule of English (school) grammar. A typical example is the reactions to the 'exceptional' existential sentences found in the test:

SAT 6 There's the new boy in our class.
AMT 4 There was the accident in the street.

as against the 'normal' existential sentences such as:

SAT 4 There was a rope lying on the ground.
AMT 12 There is a table over in the corner.

For SAT 6 and AMT 4, the means of the native speaker reaction times were slightly shorter than those of the Finns, but the standard deviations were significantly greater (SAT 6, s = 897 msec for the Finns and 1145 msec for the natives, and AMT 4, s = 1489 msec for the Finns and 1815 msec for the natives). For SAT 4 and AMT 12, the standard deviations do not differ from what can be considered normal for the natives in the present test. The result clearly reflects some deficiencies in the Finns' ability to figure out possible contexts for the 'exceptional' existential sentences: they were less able to imagine possible 'worlds' in which the sentences could be located, while the greater standard deviations for the natives indicate that some of the natives, at least, spent a longer time in searching for such contexts on the basis of their wider pragmatic knowledge of the uses of their native tongue.

The process of sentence perception

In normal interactional situations, the interactants find themselves in a state of uncertainty. Their task as participants in communicative interaction is to reach an agreement on each other's intentions. The interactants start from a number of facts that are known to them on the basis of various parameters of the situation (relating to the context and the interactants themselves); this knowledge functions as a primary set of constraints for the possible interpretations of the interactant's messages. The identification and further interpretation of the incoming messages is crucially dependent on these constraints, and takes place, for the most part, through a process of rejecting the improbable interpretational variants offered by the message processor.

The rejection of a potential interpretation takes place on the basis of any knowledge available for the processor, either syntactic, semantic, pragmatic, or other. This process of rejecting the potential interpretations may lead to a situation of ambiguity: the processing mechanism is unable to judge which one of the several possible interpretations is the one which is to be left behind after the rejection process.

In tests of the present type, the hearer is seriously handicapped – as against hearers in naturalistic situations – by the fact that he lacks the context which normally figures on the left-hand side of the sentence. It can be predicted that in situations like this some native speakers spend more time imagining possible contexts while others may have access to several potential interpretations from the very beginning, which makes it possible for them to solve the interpretation task in a time clearly shorter than the average (cf. Pynte 1978:126). This is seen as an increase in the standard deviations of the native speaker reaction times. In addition, it is also possible that the hearer is left with no possible interpretation despite the fact that there is no abvious reason for rejecting the sentence.

In interactional situations, the speech input from the other party is an unknown denominator positing certain open questions in addition to the elements that are predictable on the basis of the constraints mentioned above. The interpretation process could be described as consisting of attempts to decrease the amount of uncertainty. In most cases, the hearer is satisfied with a state which leaves the level of uncertainty unaltered or lower than before as a result of the input received. If the interpretation based on the speech input results in a rise in the state of uncertainty, ie. the score of potential errors as detected by the hearer rises higher than is accepted by him, the hearer takes steps to interfere in the process (cf. Marcus 1981:199).

Theoretically, the hearer can resort to two ways when he wants to interfere: (1) he can ask for more input, ie. he interferes in the speech chain of his interlocutor and asks for more information (which is something that is not possible in test situations of the present type), or (2) he scans his memory for more information that could be used for the interpretation of the message. People scan their memories at the rate of about 38 milliseconds per item, which means about 25 items per second (Lachman et al. 1979: 131). The more information there is at hand the longer the processing time. This kind of reasoning means for the analysis of the tests of the present type that the natives would always be slower in their reactions because of the greater amount of linguistic and other knowledge that they process. This is not however the case, as is seen in the test results even for the ambiguous sentences: the means of the native speaker reaction times are lower with the exception of one single sentence, which is sentence 1 of the AMT, *My favourite drink is the wine.*

The conclusion to be drawn from the results is that the natives have more automatized knowledge of the language to be used to facilitate the preattentive, automatic process of recognition. The fact that *some* native speakers spend a longer time than the non-natives in seeking the information to be used for interpretation is reflected in the standard deviations. The non-natives having less experience with the language have normally to rely on the immediate, often linguistic, context. Simultaneously they are less able than the natives to make use of the context for their interpretations. This means that they have to rely on their first-hand reactions which are mostly based on a bias reflecting various teaching-induced criteria concerning acceptable usage. The non-natives have fewer garden paths to be tested (cf. Grosjean 1980) than the natives, which also means that they have fewer probabilities to be considered.

Reactions to ambiguity

As was pointed out above, the Finns' reactions to the ambiguous sentences did not show much variation. For instance, the Finns' reactions to sentence 1 in the AMT were the fastest for all twelve test sentences through an almost unanimous non-acceptance of the sentence, while only three of the sentences required longer mean reaction times for the native speakers in this test, the four natives reaching a tie in their decision as to the acceptability of the sentence. It seems that the search for a possible interpretation is particularly tricky in this instance because it requires the glossing of a countable use for the word *wine*, which seems to be rather improbable in this particular context ('My favourite drink is that particular brand of wine.').

One of the three sentences that required longer reaction times of the natives is one of the 'exceptional' existential sentences, sentence 4, *There was the accident in the street*, which, typically, would require the left-side context, as is seen in the 50% rejection of this sentence as unacceptable by the natives.

For sentence 5, *A lion is found widely in many parts of Africa,* the native speakers were unanimous in their negative reaction, while this sentence was very problematic for the Finns. Those of the Finns who could not rely on their automatic reactions, ie. whose proficiency in English was not good enough for them to be able to make the decision automatically, were unable to refer their decision to any rule, because in this case there is no rule available in school grammars. The relatively great standard deviation for the native speakers in this case may be due to the same reason: despite the apparent acceptability of the sentence the indefinite article cannot be used for generic reference in sentences like this.

The third sentence, sentence 8, *Death of her friend came as a great shock,* for which the reaction times of the native speakers were longer than for sentence 1 is clearly grammatically unacceptable despite the fact that one of the four natives was able to think of a context where he could use it; it took a long time for him to come to this conclusion, which also explains the unduly great standard deviation for this sentence despite the fact that this sentence is not ambiguous the same way the above sentences are. The Finnish subjects were largely dependent on their explicit grammatical knowledge; they seem to have scanned their memories for rules irrespective of the test type. Even in the Simple Auditory Test they clearly monitored, although the test was designed to call forth automatic processes.

Implicit knowledge seems to be used more readily for sentences which are clearly acceptable or clearly non-acceptable, while in cases of trouble the monitoring facilities are immediately available. This speaks in favour of a processing model in which the information available through the input is accessed in two modes: a direct mode, in which the hearer makes use any information available to identify and interpret the signal as soon as possible, and an indirect analytic mode, which is necessary whenever the direct mode fails to give a satisfactory response. In most cases, the recognition threshold is reached directly, and the budding analysis fades away (cf. Lehtonen and Sajavaara 1980).

It is necessary for the speakers to "utilize familiar patterns to reduce the amount of input information that must be processed to effect identification" but, simultaneously, familiar patterns are used to "aid in identifying new and less familiar strings" (Vellutino 1982:121).

It is easy to conclude on the basis of the preliminary data derived from the first set of reaction time tests included in the Jyväskylä Cross-Language Project in full agreement with Vellutino (1982:34) that "word recognition necessitates a variety of strategies that the skilled reader apparently has at his or her disposal". It is important to remember that the "unit of perception is relative rather than absolute". Syntactic knowledge could be given as an example of the multiple uses of input data; it can serve the following four functions: recognition, prediction, enumeration, and postdiction. Syntactic knowledge can enable the listener to recognize familiar patterns; it can enable him to predict a likely concomitant event; it allows for him to enumerate the various realizations of a prediction; and it can enable him to confirm a hypothesis which is consistent with a constraint (cf. Hayes-Roth 1980: 2ff).

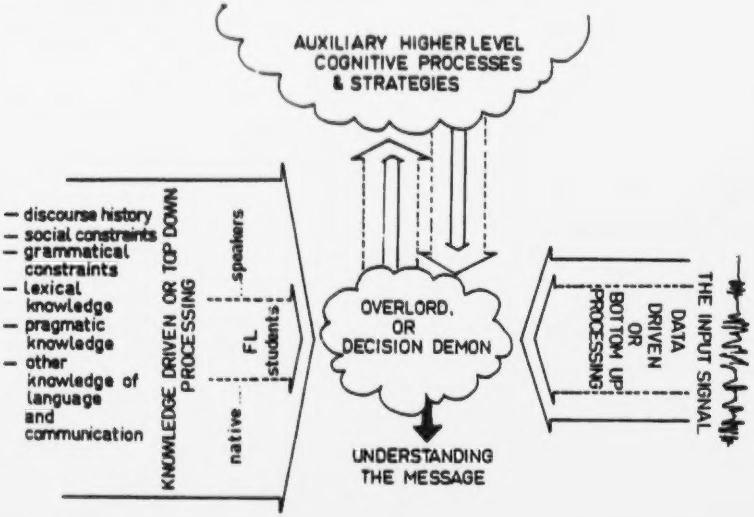
The top-down bottom-up dichotomy

The direction of the information flow in the mind of a foreign language learner as compared to that in the mind of a native speaker is one of the interesting problems involved (see Figure 3). In normal fluent native-like processing, much of what is 'understood' seems to be based on the existing knowledge of language and language use, while cognitive monitoring of the speech input is often thought to be active rather rarely when, for instance, uncommon words or very complex or otherwise difficult sentences occur.

The process of understanding is relatively fast as compared to the progression of the speech input on the time-axis. Automatization of many of the processes leaves cognitive capacity for, eg., discourse regulation and textual processing and other cognitive processes which take place during communicative interaction.

In many cases, the foreign-language student seems to be unable to use what is called the top-down processing mode simply because there is no such knowledge in his memory that could automatically generate predictions for linguistic or other relevant structures, or activate words or idioms in the lexicon by means of transitional probabilities and reject improbable interpretations of the speech input, which may be, moreover, reduced and seriously distorted. Accordingly, the non-native speaker gives the impression of being

Fig. 3. A highly simplified graphic illustration of the two modes, top-down and bottom up, of information processing necessary for message understanding. The illustration implies that both the amount of available linguistic and other top-down knowledge and the amount of information which a person is able to pick up from the incoming speech signal or a string of letters is smaller for the foreign language student. Accordingly, he is forced to resort to higher-level cognitive problem-solving strategies more frequently than the native speaker, which, in turn, consumes cognitive capacity, takes time, and results in break-downs and disfluencis in communication. For further details, see Sajavaara and Lehtonen 1980 and Sajavaara 1981.


AUXILIARY HIGHER LEVEL COGNITIVE PROCESSES & STRATEGIES
— discourse history
— social constraints
— grammatical constraints
— lexical knowledge
— pragmatic knowledge
— other knowledge of language and communication
KNOWLEDGE DRIVEN OR TOP DOWN PROCESSING
native ... speakers
FL students
OVERLORD, OR DECISION DEMON
UNDERSTANDING THE MESSAGE
DATA DRIVEN OR BOTTOM UP PROCESSING
THE INPUT SIGNAL

more dependent, in many cases, on the speech input than his native interlocutor is. A native speaker's larger experience with the language and his better knowledge of the canonized structure of the language makes it possible for him to make use of the reduced and distorted speech signal (cf. Slobin and Bever 1982).

When a non-native speaker does not know a word or does not recognize an idiom, his only chance is to resort to his native language knowledge , to his general knowledge of human behaviour, language and communication and, what is more noteworthy, to the explicit knowledge of the grammatical structures of the foreign language as taught in the foreign language classroom. The testing of various translation equivalents, monitoring of the rules, and other cognitive problem-solving procedures load the cognitive system to the effect that the student is no longer capable of other kinds of behavioural planning and regulation. This, in its turn, may call forth situational anxiety, which makes communicative tasks even more difficult and, in the utmost case, results in a total collapse of the interactional situation.

Vellutino (1982:79) concludes from his survey of recent research in perceptual units of word recognition in reading that the perceptual unit is determined by "three interacting contingencies": (1) the context in which the word is encountered; (ii) the characteristics of the word itself; and (iii) the skill of the reader. This relates directly to the problem of the relative importance of top-down or knowledge-based and bottom-up or input-driven processes at the early stages of second language acquisition as against the situation when a higher level of language proficiency has been reached. The tests discussed in the present paper, for instance, could be interpreted, at least in part, as an indication of the fact that, in comparison with the native speakers, the Finnish learners seemed to be more dependent on the speech input. For instance, six out of the twenty Finnish subjects were able to report sentence 17 of the SAT (**I saw very good film last night*) as unacceptable, while five out of six natives accepted what they heard.

Top-down processes are normally regarded to be more typical of fluent readers as compared to the beginners, who are thought to be more dependent on clues on the letter level (cf. Tommola 1981:93). More recently it has however been suggested (see, eg., Stanowich 1980:58; cf. also Vellutino 1982: 156-170) that even the youngest readers are able to use context to facilitate word recognition and that good readers might be more sensitive to the context than the beginners but less dependent on it. In addition, there is data that seems to contradict the hypothesis that better readers are less reliant on graphemic information. It seems that "it is the processing of the *good* readers that is primarily data-driven, in that it is the speed of their context-free word recognition that allows capacity to be freed for comprehension processes" (Stanowich 1980:58).

It seems that the relevant importance of top-down and bottom-up processing is a much more complicated question from the acquisitional viewpoint than just a mere cline from reliance on input data to reliance on knowledge.

Consideration of the three contingencies which are mentioned by Vellutino reveals that less experienced users of a language are handicapped in terms of all the three criteria. Even if they were forced to rely on contextual information as a result of defective information about potential surface strings in the input, which would make direct access to the lexicon possible, they are less able to utilize the context because of their lack of pragmatic experience with the use of the language. Both for the experienced and less experienced users of the language, the detection mechanisms are attuned to the reception of the input signals, but since the less experienced speakers of the language cannot rely on prognoses based on various canonical sequences embedded in a native speaker's knowledge store (cf. Slobin and Bever 1982), they have to pay attention, to a greater degree than the more experienced ones, to various lexical and syntactic structures; with proficient users of the language such attention is minimal and they are primarily concerned with meaning (cf. Vellutino 1982: 156). On the basis of the information about readers at different stages of the development of the skill it can be predicted that at intermediate stages they "would manifest greater variability in their use of meaning and structural principles of categorization" (Vellutino 1982: 156). It may also be that serial processes are primary with less proficient learners as against holistic ones.

The foreign language learner

Cross-language data available through the Finnish-English Cross-Language Project seems to imply, in addition, that speakers of different languages may be prone to utilize structural surface information differently (see Sajavaara and Lehtonen 1980; cf. Marcus 1981:201ff.). Bates et al. (1982) report similar results of a study of functional constraints on sentence processing in English and Italian.

In Finnish, lexical surface items contain a multitude of morpho-syntactic information which is valuable for the establishment of the constraint networks that govern the prognostic patterning of the incoming input signal. In English, it is the relative order of the lexical items and their position in the surface string that gives the same information. A speaker of Finnish is thus much more clearly attuned to receive signals that are embedded structurally in single lexical items. Thus some of the students' difficulties in the processing of English may be caused by interference in such processes or in various schemata in the processing of linguistic information rather than by interference deriving from the grammatical structures of the two languages as such. The amount of such interference depends on the degree of difference in the information-conveying structures between the two languages.

The learner's tendency to rely on structural properties is reinforced by what might be called instructional bias. While native speakers have encoded multiple representations of the information contained in the input strings, the learners tend to focus on certain types of surface phenomena that have been put into relief by foreign language teaching materials. This means that they are able to monitor certain types of phenomena but unable to detect others that do not figure as rules or representations in the teaching materials. Moreover, traditional foreign language teaching practices, at least in Finland, tend to increase, even today, the importance of error-monitoring and error-detection, which is reflected on the reaction times in the present tests.

Some of the students' processes which differ from the processing modes employed by target-language native speakers can be interpreted as being largely dependent on auxiliary problem-solving strategies, to which the students resort to fill gaps in their target-language knowledge. The amount of such 'interference' is inversely proportional to the students' linguistic and pragmatic knowledge of the target language. To a large extent, these strategies consist of various types of interference phenomena, and they include, for instance, the monitoring of the rules learned in the foreign language classroom and the testing of various translation hypotheses based on the mother tongue.

In addition, language users' performance should always be considered to be relative to the task demands. Several task variables can alter the cognitive processes required for the implementation of a linguistic task (cf. Kirby 1982). A situation in which various parameters of perception are studied by presenting isolated test sentences to informants is clearly unnatural: it lacks an important facilitating factor, which is the discourse context (cf. Foss 1982).

In tests in which the subjects are expected to cope with context-free sentences in a rather artificial test situation, native speakers and foreign language learners can be expected to behave differently: the situation can be expected to affect the natural reactions of the non-natives more than those of the natives. The natives' reactions to the ambiguous sentences in the test as against all the other sentences implies, as compared to those of the Finnish subjects, that even in this kind of a test, the primary concern of the native is meaning, while the Finns tend to be interested in the structural properties. In this way it is essential to consider the interaction between sentence comprehension proper and the tasks which are devised to measure this process, to see whether the procedure guarantees that the subjects make an attempt to understand the test sentences.

The variability of test performance by subjects also causes certain problems. Differently from what was earlier thought to be the case – that learners perform better under conditions in which they tend to monitor – Tarone (1982) has suggested that monitoring causes more variance in the results and accordingly there is a certain tendency for a greater incidence of non-acceptable language usage.

Conclusion

In the 'normal' mode of speech recognition and interpretation, ie. understanding, the access to meaning is automatic, and it proceeds autonomously without the listener being conscious of the processes which are going on. According to the model of ambiguity resolution developed by Seidenberg et al. (1982), when there is ambiguity, the components of meaning are "at similar activation levels"; they are both accessed and passed on to a subsequent integration stage, where they are evaluated against the information provided by the context (Seidenberg et al. 1982:525). In a normal speech situation, contextual information is used in a top-down or message-level processing mode to restrict the number of possible interpretations.

It is possible to hypothesize that processing proceeds independently at several 'levels' simultaneously with the decision reached at each individual decision point being controlled by the various interacting levels in terms of the relevant, precise task conditions (cf. Forster 1979:32; see also Spoehr 1981). One of these levels could be one of acceptability, which involves decisions on the acceptability and non-acceptability of utterances. We could hypothetize the existence of an acceptability-detection automaton, which automatically weighs the 'familiarity value' of the incoming sentence. If the familiarity falls below the rejection threshold value, or if the sentence deviates too much from what is plausible (cf. Lachman et al. 1979: 174ff.), it is rejected and the analysis will not proceed further.

Automatic processing frees cognitive capacity for 'higher level' tasks such as integration of information and inferencing. The processing itself comprises a chain of choices between a limited number of alternatives which are 'primed' by the lexical, semantic, syntactic and pragmatic constraints arising from the context.

In the case of isolated ambiguous sentences such as those included in the tests reported above, the automatic process opens several garden paths, whose appropriateness has to be determined by means of general linguistic and other knowledge with the help of existing cognitive problem-solving modalities (cf. Eisenberg and Becker 1982).

The theory of grammatical decision-making can be integrated into the general model of signal detection, which explains the slower responses found in the tests on the basis of the concept of stimulus familiarity. According to this concept, items that fall below the threshold of unfamiliarity or above the threshold of familiarity are responded to very quickly, because they require no search of memory. But items which fall between the two thresholds are responded to only after a relatively time-consuming memory search (cf. Lachman et al. 1979: 173ff.). In the tests reported above, the sentences which fall unanimously below the level of acceptability or plausibility, and are therefore rejected, and the sentences which correspond to the general patterns of expectations, and are accordingly accepted, elicit a markedly faster reaction than those that fall between these two thresholds.

It is necessary to examine further the question of the time needed for decision-making in linguistic tasks where the stimulus is ambiguous in different ways, ie. lexically, syntactically, semantically, discoursally, or pragmatically.

Measurement of on-line processing in terms of the assessment of subject performance such as it occurs in real time is an essential requisite for the understanding of language comprehension. The study of comprehension as a function of time is particularly important in contrastive psycholinguistics because it serves as a method to depict such difficulties encountered by the language learner in foreign language comprehension as are caused by trade-offs taking place as a result of restricted time-by-processing capacity.

We must not, however, be confused by the apparent simplicity and uniformity of some of the test results. It is always important to remember that in tests of this type the complexity of real-life interactional communication is seriously reduced. As is pointed out by Barnes and Todd (1981), conversation "is characterized by ambiguity, misunderstanding, meanings that insensibly change, and by what we have called 'fuzziness', all of which arise from the nature of conversation, the diversity of participants' social experience and therefore the diversity of the frames available". Ambiguity of diverse nature is typical of everyday conversation, which means that native speakers are continuously faced with the kind of dilemmas that are shown to be problematic for them. It goes without saying that such problems are multiplied for a non-native speaker: he may sail through the shallow waters of interactional situations unaware of such problems because, as the tests reported here clearly indicate, he makes his decisions on the basis of defective data and his idea of trouble may be seriously distorted by the apparent simplicity of the processes involved.

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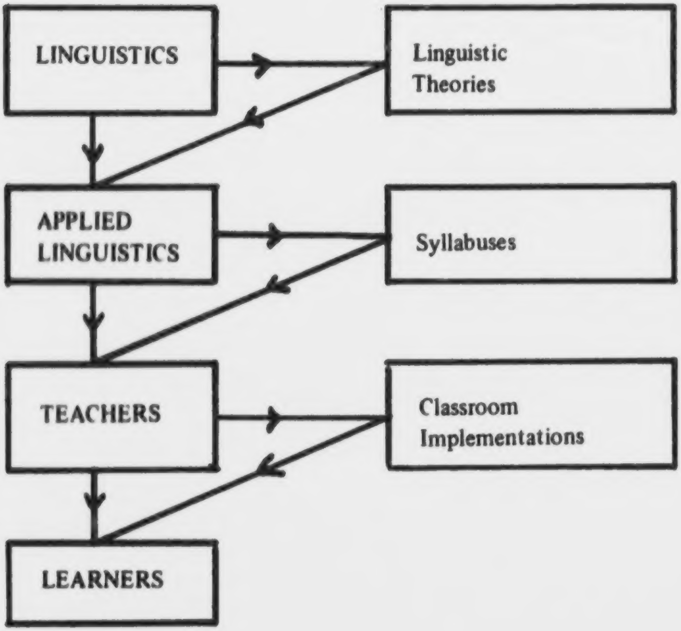
PSYCHOLINGUISTICS AND LANGUAGE LEARNING: SOME RESERVATIONS

In 1973, Pit Corder described a model of the World of Applied Linguistics which looked something like the model shown in figure 1.

Fig. 1. Applied Linguistics and Other Disciplines


LINGUISTICS
Linguistic Theories
APPLIED LINGUISTICS
Syllabuses
TEACHERS
Classroom Implementations
LEARNERS

The topmost level of Corder's model was inhabited by the Theoretical Linguist, whose role was to study languages and to derive Theories about them on the basis of the observations that he made. Beneath the Theoretical Linguist came the Applied Linguist. His task was to take the Theories produced by the Theoretical Linguist, to work on the descriptions the linguists produced, and to turn them eventually into Pedagogical Grammars. These Pedagogical Grammars were in turn passed onto the next level of the model, which was inhabited by real Teachers. Their job was to implement the ideas of the Applied Linguists by teaching languages using the materials these latter supplied, to the Learners who lived on the lowest level of the structure.

There are, of course, a number of objectionable features about this view of the world – the intensely hierarchical structure that this model implies, for instance, and the way that insights and information are seen as passing only in one direction, from the top to the bottom. Nevertheless, the model does emphasize one feature which was actually very characteristic of Applied Linguistics in the 1970's: its almost total dependence on theoretical linguistics as a source of ideas and insights. Indeed, it used to be remarked (somewhat scurrillously) that Applied Linguists were generally those who were not clever enough to do real linguistics on their own! Fortunately, the position has changed somewhat in recent years.

In one important respect, however, the position has not really changed at all. Applied Linguistics is still a client discipline, just as it was 10 years ago. The principal difference is that we now acknowledge a number of different "real" disciplines on which we rely; sociolinguistics, child language acquisition, and now more cautiously, psycholinguistics, have all in their turn been added to theoretical linguistics as a source of ideas, and each in its turn has influenced the type of work that applied linguists do and consider important.

The current fashion is for us all to become psycholinguists, and to base our methods and models on what is currently considered important in psycholinguistics. There is, of course, nothing inherently wrong in this, and indeed, there is much to be gained from adopting some of the rigorous methods which characterise psycholinguistic work and which are notably lacking from much of applied linguistics. Nevertheless, it seems to me that simply relying on psycholinguistics in the same way as we have relied on other disciplines in the past is not perhaps the best way for our discipline to develop. There are two main reasons for this, both of which have to do with serious limitations of psycholinguistics as it is practiced today.

The first reason for reacting cautiously to the move in the direction of psycholinguistics is that though the general methods used may be of importance to those of us who are interested in second language acquisition, much of the current work in psycholinguistics is very narrowly based, and difficult to generalize from. The most obvious example of this is the way that practically the whole of current psycholinguistic research is based on English, with only occasional forays into other languages, and even then rarely straying outside the Indo-European fold. As languages go, English is a pretty bizarre one. It has a particularly complex phonology, and a highly irregular orthography; its vocabulary is derived from a series of complex interactions with other languages; its morphology is so simple that it has been seriously suggested that the language can fruitfully be considered as a sort of Nordic pidgin. Still, despite these complicating characteristics, it is an easy matter to find instances of psycholinguists assuming that what holds for English will hold willy-nilly on a universal level as well. One good example of this is Fodor, Bever and Garrett (1974), whose book contains only one example of an experiment that was not carried out in English. This example, with material in Dutch, translates morpheme for morpheme onto English, and the whole discussion is written as if the experiment had actually been carried out in English!

My own belief is that this dependence on English is a Very Bad Thing. It is relatively easy to find instances of languages where the basic assumptions one makes about the way native speakers handle a language just do not apply, and where it is perfectly obvious that some other mechanism must be operating. A particularly good example of this is the field of word recognition – an area where we have a pretty good idea of what goes on in native English speakers. Low-level characteristics, such as word structure, are unfortunately characteristics where there are marked differences between languages, and it is a simple matter to find instances of languages where even the most basic aspects of our current English-based word-recognition models just do not apply. Many examples will readily spring to mind, but let me give one example from my own work on Welsh.

It is widely believed that initial consonants play a very important role in word handling in English (Marslen-Wilson 1978, for instance). Welsh, in common with other Celtic languages, enjoys a phenomenon known as initial consonant mutation. This process causes the initial consonant of a word to change, according to a wide range of syntactic and morphological contexts. Some of these changes are shown in figure 2.

Fig. 2. **Mutations in Welsh**

Orthography:

basic form	p	t	x	b	d	g	ll	m	rh
soft mutation	b	d	g	f	dd	ø	l	f	r
nasal mutation	mh	nh	ngh	m	n	mg	– no change –		
spirant mutation	ph	th	ch	– no change –			– no change –		

Phonology:

basic form	p	t	k	b	d	g		m	r
soft mutation	b	d	g	v	ð	ø	l	v	r
spirant mutation	f	ø	x	– no change –			– no change –		

Some examples:

English	Orthography	Phonology
a cat	cath	kaø
your cat	dy gath	də gaø
my cat	fy nghath	vəŋ haø
her cat	ei chath	ei xaø
a ball	pêl	pel
your ball	dy bêl	də bel
my ball	fy mhêl	və mhel
her ball	ei phêl	ei fel
a garden	gardd	garð
my garden	fy ngardd	va arð
your garden	dy ardd	da arð
her garden	ei gardd	ei garð

These changes are linguistically quite simple, but if we assume that word recognition models that work for English should also apply in the case of other languages, then one would expect this phenomenon to be extremely disruptive of word handling behaviour. Interestingly, this does indeed appear to be the case for native English speakers who learn Welsh; for this group, mutations are a serious source of difficulty. Native Welsh speakers, however, do not seem to suffer any handicaps due to the mutation system, and indeed they can even cope easily with the forms which result from interactions between mutations and spoonerisms – forms which by English standards are extremely bizarre. (See figure 3).

Fig. 3. Interactions between mutations and spoonerisms in Welsh

O = orthographic form
T = translation
I = intended form (in phonetic transcription)
E = the resulting erroneous form

1: O: ... tri baner goch ... T: three red flags
I: [.... baner gox ....]
E: [.... xaner fox ....]

2: O: ... y mân wahaniethau T: the small differences
I: [.... man wahanieθai]
E: [.... gwan fahanieθai]

The obvious conclusion to be drawn from this is that the characteristics of models devised to describe word-handling in English are not going to be adequate when we work with Welsh – or with a variety of other languages which are not closely related to English. In order to describe adequately what goes on in these languages, we may need to discover some radically different operating principles. This in its turn also raises some interesting questions about the psychology of word handling in second languages. If Arabic and Finnish, for example, both differ in different ways from English, then one might expect Arabs learning English to have word handling problems which are quite different from those of Finnish learners of English. At the moment, however, we know practically next to nothing about contrastive psycholinguistics of this sort, and even less about the implications of these phenomena for second language acquisition, and psycholinguistics is not going to be able to throw much light on these problems until it becomes much less Anglo-centric.

The second reason for being somewhat cautious about the influence of psycholinguistics is that, from the point of view of second language acquisition, at least, psycholinguistics is not really asking the right questions. Recent years have seen a marked shift away from work on fairly low-level phenomena such as word recognition and sentence processing to more abstract higher-order phenomena such as discourse processing and the handling of underlying schemata. My own feeling is that this is not a good thing for Applied Linguistics. There seems to be a strong case for the view that languages are fairly similar at an abstract level, while they differ importantly at lower levels of organization. At the same time, it also seems reasonable to argue that these low level features are precisely the ones which have the biggest influence on the development of different psycholinguistic strategies. Psycholinguistic descriptions of higher order processes seem much more likely to have universal validity than descriptions of what goes on at a lower level, which appears to be much more bound in with specific languages. If this is true, then any shift away from low-level phenomena towards a more abstract level of analysis is likely to mean that psycholinguistics will become increasingly less relevant to the study of second language acquisition. Such a shift is implicit in the current rapprochement between psycholinguistics and Artificial Intelligence, and if it continues, we will once again find ourselves without a natural home.

To sum up, then, it is clearly a good thing for Applied Linguistics to adopt experimental methods where these are appropriate, and to think much more in terms of testable models of what handling an L2 might involve. On the other hand, it would be a great pity if psycholinguistics were to become merely the next of a sequence of parent disciplines whose umbrella we work under for a few years before moving on to its successor. This would merely perpetuate our status as a second division, dependent discipline, lacking an intrinsically coherent intellectual framework. Talking to colleagues from other disciplines can often be an embarrassing experience for an applied linguist. People in general have little awareness of why second language acquisition is an interesting phenomenon, or why it has enormous potential importance on a social level. I am quite convinced that this is mainly due to the way we have latched ourselves onto other disciplines, and that the way we have subordinated ourselves to the theoretical concerns of others is something that has done us lasting harm. The only way in which we are going to alter this state of affairs is for us to work out what our own priorities are, and then to become more self-confident and assertive about pursuing them. A permanent, on-going search for a parent-discipline, or willing acquiescence in the implications of a model like figure one, is incompatible with the self-respect that we ought to have.

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DEVELOPMENTAL CHANGES IN VISUAL AND AUDITORY INTERFERENCE PATTERNS FOR BILINGUAL HIGH SCHOOL STUDENTS

Introduction

The present paper deals with two experimental studies on German-Swedish bilingual high school students. Both are developmental studies with length of residence in Sweden as the main independent variable. The purpose was to follow the developmental changes in intra- and interlingual interference and to find out whether these interference patterns are related to intelligence as measured by a non-verbal test. In the first study Stroop tasks for vision were used, in the second study dichotic translation tasks for the auditory modality.

The reasons for doing these studies were: (1) For the bilingual case there do not exist any developmental studies with Stroop tasks. (2) Those who have used Stroop tasks with bilingual subjects (Dyer 1971, Ehri and Ryan 1980, Hamers and Lambert 1972, Preston and Lambert 1969) have generally found higher amounts of intralingual interference, however, somewhat task dependent. In Preston and Lambert's study equivalent amounts of the two types of interference were found when the color words in the two languages resembled each other. What one should expect for any task are equivalent amounts of interference at least during certain periods. (3) In all previous studies considerable amounts of interference from the other language were found, too, and taken as evidence for the interdependence hypothesis of bilingual storage. Thus, the results of the present study were expected to increase our knowledge about the structure of bilingual memory in terms of common or separate storage. (4) Whereas the effect of bilingualism on intelligence has been the topic of many research projects, the effect of intelligence on bilingualism has been largely ignored (McLaughlin 1978). If one assumes that linguistic functioning is closely dependent on cognitive functioning (Bever 1970, Macnamara 1970), Stroop task performance and performance on Raven's Progressive Matrices should be correlated, not necessarily with the simple naming conditions, but with the interference conditions of reading over naming.

In previous studies with monolingual subjects the relation between Stroop scores and intelligence was found to be tenuous. However, those studies mostly used college students and the correlations may have been depressed somewhat by the restricted range of ability. As the present study uses high school students who are supposed to be more heterogeneous groups, the correlations are expected to be stronger, especially since Stroop task performance in this case requires a good mastery of more than one language.

Method

Material. For the visual modality both color-word interference tasks were used where the color words in German and Swedish are similar, and picture-word interference tasks where the words in the two languages are less similar and tap a greater variety of semantic relations.

In the Stroop color-word task the time it takes to name colors printed in semantically incongruent color words is compared to the time it takes to name colored patches or Xs in a control condition. The bilingual form of the test presents the color words in one language with the instruction that the ink colors are to be named in the bilingual's second language. Stroop color interference cards were constructed with 50 color words per card. On one card the interfering words were written in Swedish (blå, gul, röd, grön), on a second card in German (blau, gelb, rot, grün). A third control card consisted of triple Xs written in blue, yellow, red, and green inks.

In the picture-word interference task six sheets of ten pictures each, depicting common objects like table and pencil, served as stimuli. The interference condition was established by distractor words belonging to the same semantic category as the pictures, e.g., the word "knife" was placed in the middle of the pictured object "scissors". Twenty German and 20 Swedish distractor words were superimposed on 40 pictures. In the control condition a sequence of Xs was placed on 20 pictures, covering approximately the same space on them as the distractor words.

Procedure. The subjects were tested individually in sessions that lasted about 60 minutes. Each subject performed the following six tasks, three in each language: (1) named the colored series of Xs in German, (2) named the colors of German color-words in German (interlingual condition); (3) named the colors of Swedish color-words in German (interlingual condition; (4) named the colored series of Xs in Swedish, (5) named the colors of Swedish color-words in Swedish (intralingual condition), and (6) named the colors of German color-words in Swedish (interlingual condition).

Similarly, the six experimental conditions in the picture-word task were run in counterbalanced order. Likewise there was an intra- and an interlingual condition for both Swedish and German languages. In each condition the subjects were instructed to label the pictures as quickly as possible and to ignore the words. All sessions were taped and timed later.

After the Stroop tasks each subject was tested with Raven's Progressive Matrices, a non-verbal intelligence test.

Subjects. The subjects were 89 volunteer high school students of the German School in Stockholm, a private school with 570 studetns ranging from preschool to grade 13. Instruction is in German and Swedish at both elementary and high school level, with German the dominant classroom language. The students are taught Swedish history, political science, and Swedish language in Swedish by Swedish teachers. The other topics are taught by German teachers, who hold multiannual contracts.

The German-Swedish bilingual group consisted of 74 subjects. For all these subjects German was the home language and the first language, at least during the initial years of residence in Sweden. Swedish was acquired outside the home in a natural milieu. Thus, both languages were acquired in informal environments as well as in formal training situations in school. Generally, after some years of bilingual training the students handle both languages with the competence of a native speaker.

A trilingual group of 15 subjects participated, too. Beside German and Swedish, the subjects had a third language as a daily medium of contact: Spanish (6), English (2), Danish (2), Hungarian (2), Finnish (1), French (1), and Yugoslavian (1), respectively. In some cases the third language was the language at home; in most instances only one parent spoke this language with the child.

Design. The study, which has a cross-sectional approach, is longitudinal, covering a period of 16 years, with length of residence in Sweden as the independent and response times on Stroop tasks as the dependent variable. The 74 bilingual students were divided into five groups, according to residence in Sweden. The age in each group varied between 14 and 19 years, but the mean age in the different groups was very uniform around 16 years.

To examine the influence of several language systems on Stroop task performance, the response time scores of 15 bilingual and 15 trilingual subjects were compared. The groups were matched for age (mean = 16.2 years), length of residence in Sweden (mean = 5.6 years), and results on Raven's Progressive Matrices (mean = 34 points).

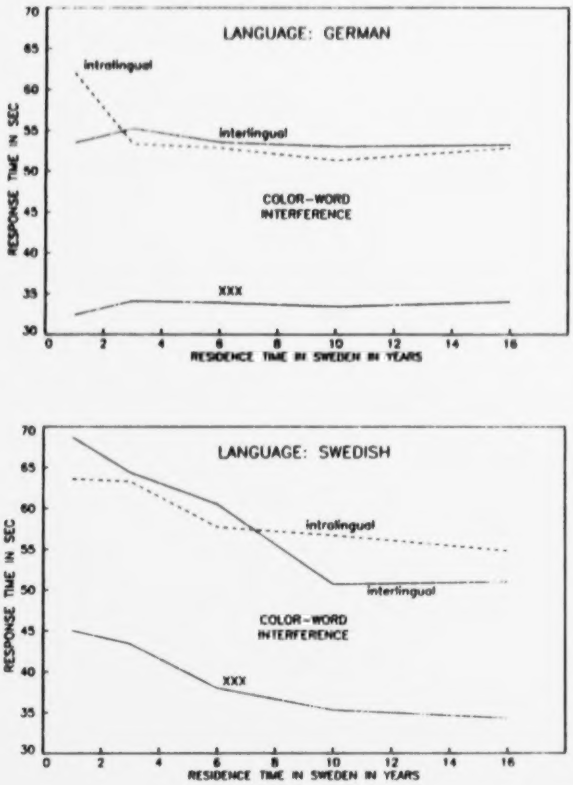
Results

Figure 1 shows the results for the color-word interference tasks. As can be seen in the left half of the figure, the students are more distracted by the German color words than by the Swedish color words on arrival in Sweden from Germany. Intralingual interference then decreases continuously and after about three years there is a short shifting point at which intra- and interlingual interference are equivalent. After that interlingual exceeds intralingual interference over a period of 13 years. The differences are, however, insignificant. In the simple naming condition there is a slight increase of response times over years from 32 to 34 seconds.

When Swedish is the language of response, again German color words lead to most interference for students with a short residence in Sweden. In this case it is interlingual interference that dominates, but the differences in the new language are less marked. When Swedish is on the way to becoming the better language, the Swedish words lead to higher amounts of interference. The differential pattern of intra- and interlingual interference resembles that when German is response and dominant language after a short residence in Sweden.

For the picture-word task the development is similar to the color-word task: considerable amounts of intra- and interlingual interference at all stages. The shifting point is somewhat later, presumably due to the fact that the task is more difficult. The increase in response times for the simple

Fig. 1. Development of intra- and interlingual interference in Stroop colorword tasks as a function of residence in Sweden. German is the response language on the left, Swedish on the right.

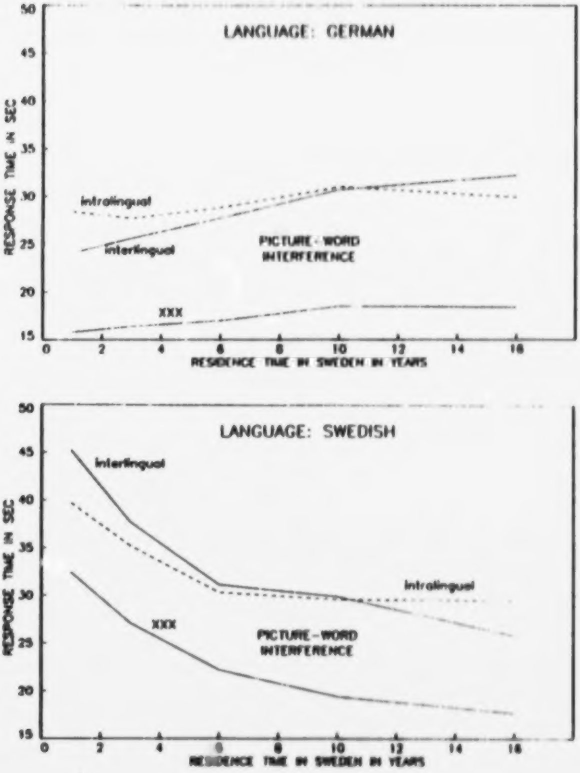


naming condition is more pronounced here and clearly significant in both languages when the group with a short residence is compared to the group with a residence of 16 years in Sweden.

In conclusion: The differential pattern of interference is mainly determined by language dominance with equivalent amounts of intra-

and interlingual interference for subjects who are about equally adept at the tasks in both languages and higher amounts of interference from one language when this language is clearly dominating. This interference pattern is not task dependent, the task determines only the shifting point or the point of language balance, i.e., the more difficult the task the longer it takes to achieve points of equivalence.

Fig. 2. Development of intra- and interlingual interference in picture-word interference tasks as a function of residence in Sweden. German is the response language above, Swedish below.



Unfortunately, the interference pattern cannot be taken as evidence for or against a hypothesis of interdependence, since the Stroop task does not permit one language to be turned off completely because competing stimuli for the other language are always present. The bilingual may not confuse the languages, but lexical selection is still a problem. The subject cannot avoid seeing the word, when responding to the color; conflict is inevitable. There are always both types of interference which do not say anything about the storage of the languages, only about their usage.

What could be taken as evidence for an interdependent hypothesis of language systems, i.e., a common storage for words at the semantic level – at least for certain words that are language unspecific and share identical meanings in the two languages – are the somewhat increased response times in the naming conditions. This phenomenon is discussed in previous studies (Mägiste 1979a, 1979b, 1980a, 1980b, 1982a) and analyzed in terms of automaticity and interference (Mägiste 1982b) where the strong interrelation of these two concepts is shown.

Table 1 shows the correlations between Stroop tasks and Raven's Matrices when residence time is partialed out. For the bilingual group most correlations are around zero, in German two out of six, in Swedish one out of six possible correlations reach significance. The results must be taken with caution, since no subject in this group performed below the normal range of

Table 1. Partial correlations between performance on Stroop tasks and Raven's Progressive Matrices with length of residence held constant.

	German		Swedish		Naming	
Group	col-w	pict-w	col-w	pict-w	col	pict
Biling	-.18	.07	-.26^{xx}	.04	-.20^{xx}	.03
Germ	-.20^{x}	-.07	-.06	.10	-.16	-.15
Swed						
Triling						
Germ	-.01	.15	-.09	-.03	.05	-.14
Swed	-.49^{x}	-.34	-.54^{xx}	-.50^{x}	-.53^{xx}	-.59^{xx}

^{x}p<.05, ^{xx}p<.025.

intelligence; the mean result for the bilingual group was clearly above average. It is interesting to note that the tasks which obviously are easy for this highly selected bilingual group turn into demanding tasks for trilingual subjects who have Swedish as their third language. This is also indicated by the longer response times for Swedish when compared to German (see Table 2 below).

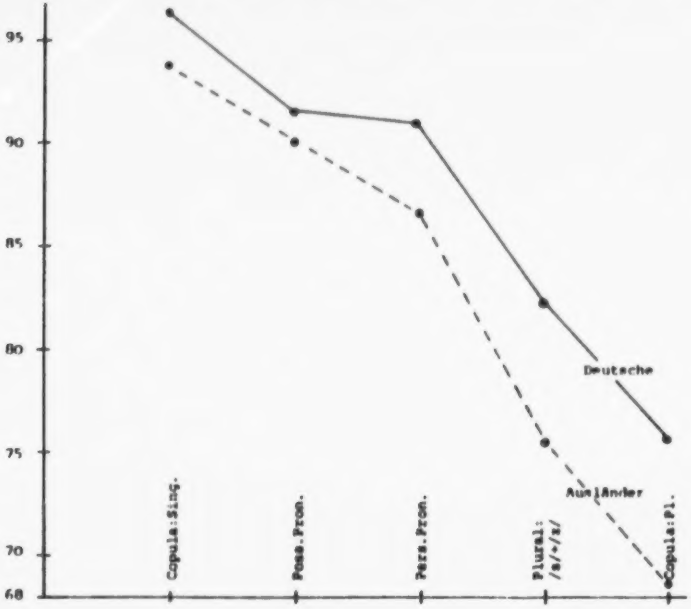
Matched on the basis of age, intelligence and residence time, the trilingual subjects are somewhat slower in both their second and third language than bilinguals in their first and second. The results are in line with Jung 1981, who compared the acquisition process of English grammar in German monolingual and bilingual immigrant children. He found that the order of acquisition was the same in both groups though somewhat later in the bilinguals.

Psychologists generally believe that people who become bilingual at an early stage will later have more facility in picking up a third language (Albert and Obler 1978), which might be the case at certain metalinguistic levels, but truly not at this very elementary level.

Table 2. Mean response times in seconds for bilingual and trilingual subjects in Stroop tasks as a function of language systems as parameter.

	German		Swedish		Naming	
Group	col-w	pict-w	col-w	pict-w	col	pict
Biling						
Germ	54.1	28.7	52.7	27.0	33.4	15.6
Swed	62.8	34.5	60.0	32.6	38.9	24.1
Triling						
Germ	61.4	31.6	57.9	31.6	35.9	20.1
Swed	62.4	37.0	63.3	37.3	42.1	27.3

Fig. 3. **Mean percent correct in different English grammar tasks for immigrant (bilingual) and German (monolingual) children. From: U. Jung 1981.**



Dichotic translation

To see whether interference effects for the auditory modality correspond to the visual case, a dichotic translation task was used with concrete and abstract sentences to be translated from German into Swedish. In every sentence there were always two concrete or two abstract nouns high in frequency, for example: "The child shuts the door" and "The work takes time".

Two groups of 20 subjects each participated, one with a clear dominance for German with a 25 seconds difference in reading speed for equivalent German and Swedish texts, and one with Swedish as the better language. This group read the Swedish text which consisted of 105 words 3 seconds faster than the German text.

There was simultaneous presentation of 60 sentences to both ears and the instruction was to translate those presented to the right ear and to ignore those presented to the left. The time left for translation was shorter than the presentation time. The task was perceived as highly unpleasant by nearly all subjects.

Results

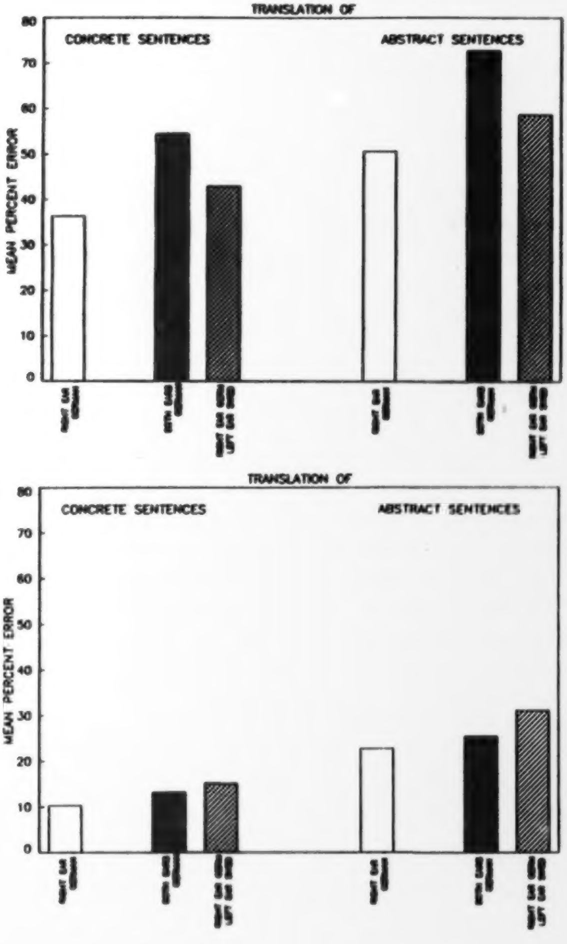
The upper half of Figure 4 presents the results of the German group with a mean of 1.5 years of residence in Sweden. In both types of sentences the students are clearly more distracted when German is on the irrelevant channel than when Swedish sentences are presented to the other ear. In the control condition with presentation to one ear only, the students perform clearly better. In keeping with the Stroop tasks for vision, interference seems inevitable, at least at this stage of incomplete mastery of a second language.

The lower half of Figure 4 shows the results of the Swedish group. After 16 years of bilingual schooling, this group is of course highly proficient in both languages as indicated by the low error rates in all conditions. There is a slight tendency for higher error rates when Swedish stimuli are on the irrelevant channel as opposed to German. In all three conditions the subjects perform about the same. Obviously, with a very good command of a language it is quite possible to ignore irrelevant stimuli which seems to be impossible at earlier stages of language development.

The differential pattern of the two interference conditions is very much alike the visual case. The differences here are somewhat less marked which is in line with results in other areas where output interference is generally greater for visual than for auditory items (Nilsson, Wright and Murdock 1979, Watkins, Watkins and Crowder 1974).

That concrete sentences consistently produced less errors than abstract sentences could be easily explained by Paivio's (1969) dual coding hypothesis which means that concrete sentences have both the verbal and the imagery code, abstract sentences only the verbal code. However, there seem to be other explanations. The most common argument against dual coding are differences in comprehensiveness between the two types of sentences. In the German group some subjects reported afterwards that they had more diffi-

Fig. 4. Mean percent error in dichotic translation as a function of language dominance: worse translation for the German dominant group (upper half of the figure) when both ears receive German stimuli than when one ear receives German and the other Swedish stimuli; the reverse pattern is found in the Swedish dominant group (lower half of the figure).



culties with the abstract sentences. If the abstract sentences generally were more difficult for all subjects, one could expect the correlations with intelligence to be higher for the more difficult task. As indicated by Table 3, the error rates in all translation tasks clearly correlate with Raven's Matrices, but there are no differences between the concrete and abstract conditions.

Table 3. Partial correlations between error rates and Raven's Matrices with length of residence held constant.

	Translation of					
	concrete sentences			abstract sentences		
	control- interference conditions			control- interference conditions		
Bilinguals n = 40	-.28^{x}	-.46^{xxx}	-.54^{xxx}	-.39^{xx}	-.29^{x}	-.48^{xxx}

$^{x}p<.05$, $^{xx}p<.01$, $^{xxx}p<.005$.

There seems to be another important factor behind the higher error rate for abstract sentences: Concrete and abstract words differ in degree of automaticity for children who learn abstract words later than concrete words. Words can be equally frequent in usage for adults according to frequency dictionaries, but still differ in degree of automaticity, which first becomes evident in highly time-limited tasks. This is certainly most pronounced in young people and in a second language which is usually acquired after the first language.

FOOTNOTE

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ON THE USE OF LEXICAL AVOIDANCE STRATEGIES IN FOREIGN-LANGUAGE COMMUNICATION

Introduction and aim

According to Pit Corder, a foreign-language learner facing language difficulty in a foreign-language communication situation may adopt either of two principal "macro-strategies" (Corder 1978). He may have a strong motivation or need to express meaning in the foreign language, and therefore use all the linguistic resources at his disposal, often at the risk of failing to reach his communicative goal, i.e. the successful passing on of precise information to his interlocutor. To these resources, which include paraphrasing, the invention of new words, guessing, and borrowing from the mother tongue, Corder gave the collective name "risk-taking" or "resource-expansion" strategies. Throughout this paper, however, they will be referred to as "achievement strategies" (so termed by Faerch and Kasper 1980).

In the opposite case, the learner ignores or abandons the target concepts for which he lacks the appropriate vocabulary. Due to inability to express meaning in the foreign language, he prefers to resort to one "escape route" (Ickenroth 1975) or another, at the cost of informative preciseness. These escape routes, commonly referred to as "avoidance strategies" in the recent literature, have also been termed "risk-avoiding strategies" (Corder 1978), "message-adjustment strategies" (Váradi 1980), and "reduction strategies" (Faerch & Kasper 1980).

The aim of the present paper is to present a typology of lexical avoidance strategies, to interpret the results as to the proportion of avoidance strategies and achievement strategies used by the learners in three different experiments conducted in the field of communication strategies, and to comment on some of the problems involved in the study of communication strategies in general and avoidance strategies in particular.

A typology of avoidance strategies

Although there exists some terminological and classificatory disagreement in the typologies established for communication strategies, most of them derive from the typology originally presented by Váradi (1980) and enlarged upon by Tarone (1977). In these typologies it has been customary to distinguish between three different avoidance strategies:

(a) *Topic avoidance* (Tarone & al. 1976a, 1976b, Tarone 1977, Corder 1978) occurs when the learner does not talk about concepts (or "topics") for which the vocabulary is not known. In extreme cases this may result in no communication at all.[1] In less extreme cases the learner directs his conversation away from the troublesome topic, e.g. by omission.

(b) *Message abandonment* (Tarone & al. 1976a, Tarone 1977, Corder 1978) occurs when the learner starts expressing a target concept and suddenly realizes that he does not know how to go on. He then stops in mid-sentence, chooses another topic, and continues his conversation. In both topic avoidance and message abandonment, therefore, the troublesome topic is completely dropped by the learner.

(c) In *meaning replacement* (Váradi 1980), unlike in topic avoidance and message abandonment, the topic is, in fact, not dropped but preserved by the learner. However, instead of trying to expand his linguistic resources and overcome his communicative problem, he deliberately chooses to be less specific than he originally intended to be. This kind of "semantic avoidance" (so termed in Tarone & al. 1976b) always results in some degree of vagueness.

In an experiment designed to elicit the communication strategies that Finns and Swedish-speaking Finns adopt when communicating in English (Palmberg 1979), 103 learners were asked to describe a series of pictures, the first two of which depicted a cave in the mountains and a caveman coming out from the cave. The following examples are taken from the data collected, and illustrate how three learners chose to avoid the target item *cave*:

(1) "I can see three mountains." TOPIC AVOIDANCE
(2) "A man is coming out from a ... er ... it's a stone aged man ..." MESSAGE ABANDONMENT
(3) "A man comes out from his ... home." MEANING REPLACEMENT

Faerch and Kasper define strategies as "potentially conscious plans . . . for solving what to the individual presents itself as a problem in reaching a particular goal" (1980:60). The strategy of topic avoidance is adopted exclusively by learners perceiving problems in the planning phase of reaching their communicative goal. Message abandonment and meaning replacement, on the other hand, may also be adopted by learners confronted by a planning or retrieval problem at a later stage, i.e. in the realization phase. The three avoidance strategies, therefore, should be seen as a continuum rather than three separate categories, because, as Faerch and Kasper point out: "At the one end, the learner says 'almost' what she wants to say about a given topic (= meaning replacement), at the other end she says nothing at all about this (= topic avoidance)" (1980:91).

Establishing the learners' optimal meaning

A great problem in the study of avoidance strategies is to know when learners actually avoid. In other words: How do we know when learners say anything rather than what they wanted to say? This is a problem well-known to those studying learners' errors (see e.g. Schachter 1974, 1979). In a critical paper on the uses of Error Analysis, Stig Johansson objects both to tests of free production (e.g. compositions) and to translations as reliable, error-eliciting devices. In the former, he points out, "the choice of words and constructions can be controlled by the learner" (1975:331). In the latter, on the other hand, "an error is often avoided by an inexact translation or a translation which is correct from the viewpoint of the foreign language but is not a correct rendering of the original text" (p. 250).

In the study of communication strategies, the first attempt to systematically solve the problem of pinpointing learners' avoidance behaviour was that of Váradi. In an experiment designed to find out how close foreign-language learners came to producing what they actually wanted to produce, Váradi asked Hungarian learners of English to describe in writing a series of pictures, first in English, then in Hungarian. The rationale behind this procedure was that the mother-tongue version, written immediately after the English version, would reveal exactly what each learner wanted to produce, i.e. his "optimal meaning" (Váradi 1980).

Learners' use of avoidance strategies in three different experiments

Váradi's methodology was soon adopted by other investigators in the field of communication strategies. There were often modifications in the elicitation techniques used, the most important of which was a shift of interest from written to oral communication strategies. Three different experiments are presented below, those conducted by Tarone & al. (1976b), Tarone (1977), and Erwin (1979). Throughout the presentation of the results, the main emphasis will be on learners' use of avoidance strategies.

Experiment 1 (Tarone & al. 1976b)

In an attempt to show patterns of stability or instability in children's use of communication strategies in a foreign language over a period of time, Tarone & al. used a "native-language base-line" to establish the learners' optimal meaning. Their elicitation instrument was a cartoon, and in addition to asking the learners, who were English-speaking children in a French immersion school in Toronto, to tell the events of the cartoon in French, they asked a control group consisting of monolingual English-speaking children of the same age group (viz 7 1/2 years) to tell the story in English. Tape-recordings were made of the narratives.

Table 1 (interpreted and modified from p. 130) shows the frequency of avoidance strategies used by six children, as compared to their use of achievement strategies and their use of correct French for the target items. The specific target items were verbs as well as objects decided upon in the semantic content of the cartoon (as judged by the native-language versions provided by the control group).

Table 1. Interpretation of Tarone & al:s data

Macro-strategies or correct French	Number of occurrences	%
Avoidance strategies	13	26
Achievement strategies	9	18
Correct French	28	56
Total	50	100

One year later, the same children were asked to perform the same task (with the same pictures) again, and their production was analysed as to their use of communication strategies.

For the 13 occurrences of avoidance strategies at Time I, the results are as follows: There were 11 shifts to correct French at Time II, one shift to an achievement strategy, and one occurrence of stabilized avoidance. Furthermore, there was a shift from correct French at Time I to avoidance at Time II.

Experiment 2 (Tarone 1977)

In Tarone's study of the use of communication strategies by adult foreign-language learners, the frequency of avoidance strategies was fairly small. Following Váradi, Tarone set out to isolate the learners' optimal meaning with the aid of a story-telling task in both the native and the foreign language. The stories performed by the nine learners (who spoke Spanish, Turkish, and Mandarin as their mother tongue) were recorded on tape.

Table 2 (modified from p. 201) shows the strategy preferences for seven semantic target concepts by each learner (identified by their initials).

Table 2. Interpretation of Tarone's data

Learner & L1	Spanish			Turkish			Mandarin			Total
Macro-strategies	GU	RD	CT	DR	AH	BL	MR	JO	MS	8
Avoidance strategies	1	1	2	0	0	0	0	4	0	8
Achievement Strategies	8	6	4	7	6	9	10	4	5	59
Total	9	7	6	7	6	9	10	8	5	67

Experiment 3 (Erwin 1979)

Somewhat different results were obtained by Erwin in his study of communication strategies used by 14 intermediate-level American students learning Russian as a foreign language. He elicited his data through oral narratives in English and in Russian, and each student provided his version of three different picture stories, containing in all 32 specific semantic target items.

In Erwin's study, the total number of occurrences of avoidance strategies and achievement strategies used in the task were 108 and 159 respectively. Moreover, assuming that the non-use of a communication strategy (as reported by Erwin) presupposed the knowledge of the correct Russian word, we get the results shown in Table 3 (interpreted and modified from p. 331).

Table 3. Interpretation of Erwin's data

Macro-strategies or correct Russian	Number of occurrences	%
Avoidance strategies	108	24.1
Achievement strategies	159	35.5
Correct Russian	181	40.4
Total	448	100.0

Discussion

As the three studies show, it is obvious that foreign-language learners make use of avoidance strategies to different extents, irrespective of age, mother tongue, or target language. It is equally obvious that these studies can only give very general directions as to the overall use of avoidance strategies by foreign learners at different levels of language proficiency. Great caution should be shown when interpreting such results, for several reasons.

First of all, reliable divisions of communication strategies even into either of the two macro-strategies suggested by Corder are very difficult to make. This has been demonstrated in Palmberg (1981 & 82), and was also pointed out by Erwin, who used a panel of four judges to classify and to decide on the communicative efficiency of the learners' productions (1979).

Secondly, it is clear that a final typology of communication strategies has not yet been achieved (see e.g. Bialystok & Fröhlich 1980, Erwin 1979). Therefore, in Tables 1-3, the interpretation and classification of communication strategies have been made according to the definitions of strategies given by the individual researchers, not according to their choice of terminology (cf. e.g. the principles of avoidance/paraphrase categorization in Tarone & al. 1976b and in Tarone 1977).

Thirdly, there is not yet any generally accepted way by which the frequency of different communication strategies could be accounted for. Tarone, to give but one example, clearly regards the use of *two* different communication strategies used by *one* learner to communicate *one* target item, as *two* occurrences of communication strategies. This may be seen in Table 2 e.g. for learner GU, who used, in all, *nine* communication strategies to communicate *seven* target items.

Fourthly, the number of factors governing the choice of communication strategies on the part of the learner is fairly large. These factors seem to be dependent on two main variables: a *learner* variable and a *situation* variable. The learner variable includes factors such as the learner's age, his learning level or stage of proficiency, his mother tongue, his knowledge of languages other than the mother tongue and the foreign language being communicated, and, finally, his personality characteristics. The situation variable, on the other hand, includes factors such as the foreign language being communicated, the target items being communicated (lexical vs. syntactic), the type of communication (real-life vs. test situation, motivated vs. unmotivated, written vs. spoken, one-way vs. two-way communication), and the language background of the interlocutor/experimenter (native speaker of the learner's target language vs. fellow foreign-language learner).

Therefore, as pointed out by Tarone (1979), it is essential that researchers take more care when reporting on their experiments, including for example the following information:

(a) What exactly was the testee asked to do?
(b) Who was present in the experimental situation?
(c) What was their relationship to the testee?
(d) What were their age and sex (experimenter as well as testee)?
(e) Was it a formal or informal situation?

Final comments

Avoidance behaviour is, by definition, an "easy way out" for the foreign-language learner who is unable to communicate a desired meaning due to vocabulary difficulty. Paradoxically, avoidance strategies may also be used by the learner to *ensure* correct comprehension by his interlocutor. Japanese learners who are tired of being constantly misunderstood when trying to pronounce an English word containing an /l/ or /r/ sound, may therefore deliberately avoid that word and instead use a synonym which causes them less difficulty in pronunciation. Although this phenomenon is claimed to be extremely rare (Schachter 1974), examples are provided in the literature. Cohen, for example, reports that Celce-Murcia's 2 1/2 year-old daughter would at times borrow a word from her second language rather than using a mother-tongue word with a sound that she had not yet mastered (Cohen 1975:121-122). Avoidance of this type presupposes a choice, and has therefore been referred to as "true avoidance" (Levenston & Blum 1977). In addition to second- or foreign-language learners, true avoidance in the lexical field is frequently adopted by e.g. teachers, translators, and editors of Simplified Readers intended for foreign-language learners.

FOOTNOTE

1. The reluctance on the part of the learner to engage in any conversation at all in the foreign language due to anxiety could, as suggested by Jaakko Lehtonen during the discussion following this paper, be seen as an avoidance strategy in its own right. If so, *conversation avoidance* would perhaps be the appropriate term to describe this kind of behaviour.

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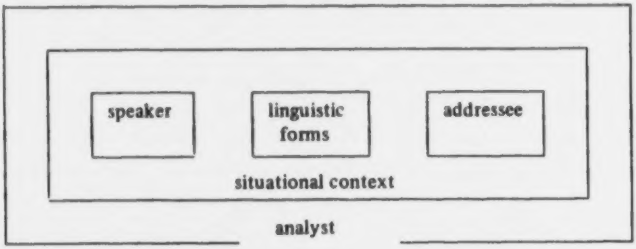
A PSYCHOLINGUISTIC APPROACH TO A PEDAGOGIC GRAMMAR

For most practical purposes the relationship between language learning and language teaching is close, in that insights into learning processes are sought in order to assist teaching. My theme is the shape of a pedagogic grammar such as might be used by teachers for reference, or more directly by syllabus planners and course book writers to guide the preparation of teaching materials. Such a grammar should in some degree reflect the teaching process, the major task of which I assume is to relate linguistic forms to meanings, in the widest sense of the term meaning. I shall suggest a Speech Act approach to a pedagogic grammar, but one in which there are only two basic categories. Each speech act involves either a negotiation between speaker and addressee(s) or is designed by the speaker to give information to the addressee. The grammar would be shaped round these two categories. Perhaps the larger section would revolve round the information category and might resemble a fairly traditional grammar, but a separate section, often involving the same linguistic forms, but including most of the description of imperatives and questions for example, would center around the negotiation category. My main purpose is to justify such an approach. This will involve touching on major linguistic issues, but as the paper is short, the treatment is not exhaustive.

One strong reason for adopting a psycholinguistic approach to a pedagogic grammar is the very practical one that much recent work in applied linguistics, as this volume demonstrates, is psycholinguistic in character. This research involves delving into the processes of the mind. When we turn to grammar we find that there are already partial descriptions of English within a model which claims to be psycholinguistic, that is within the generative grammar tradition of Chomsky and his followers. To quote Smith and Wilson[1]

"The job of the linguist is to attempt an explicit, conscious formulation of the grammatical rules that speakers know. Linguistics conceived of in this way is concerned with one aspect of the human mind, and is therefore correctly classed as a branch of psychology." Matthews has pointed out that a transformational grammar need not simultaneously claim to be a model of speaker competence, but for those who are prepared to swallow the Chomsky line, one of the problems that should ultimately be solved by applied linguistics is whether the processes involved in language learning are the same as those involved in learning other things, or different; or rather, whether the processes involved in the acquisition of competence follow their own principles, which are in turn different from those used for the acquisition of communicative competence, or rules for speaking. If so, learning how much body contact should accompany speech in Italy, or in England, follows the same lines as learning history or table manners. So too would the acquisition of Grice's maxims, if these are part of the rules for speaking, but the acquisition of grammar, lexis and phonology would follow its own quite distinct principles.

The Chomsky line has been criticised, perhaps the most formidable critic being Matthews, but he is not the only one (cf. Sampson). But one indirect and very beneficial effect of Chomsky's theory of competence has been to make applied linguists realise the limitations of the teaching of competence as he defined it as a goal of language teaching. Hence the invention of the term communicative competence and the reawakening of interest in syllabus design, the base for such syllabuses being the analysis of language in terms of functions, or notions or situations. Perhaps I could use the term functions as an umbrella term to describe the uses to which language is put. Such an approach to language typology is most likely to be sociolinguistically based, where the analyst stands outside the speaker and addressee as well as the linguistic context, and approaches language from that viewpoint.



Discourse analysis adopts this viewpoint, and while the resulting descriptions could be of great value in helping to define the end product of the language teaching process, there are still great problems in it for the language teacher and syllabus designer.

Because formal teaching occurs within a framework of ordered units, to be of use to him the language teacher needs a taxonomy of functions. Considering the immense varieties of use to which language has been, and is, put, it seems unlikely, however, that there will ever be a consensus on a sociologically based taxonomy of functions. In practice, for some language learners it is not possible to know with any precision, when they are learning the language, what they are going to be needing it for. This sets limits on the value of a sociologically based taxonomy of functions. Moreover, the contexts in terms of speaker, addressee and situation in which foreign languages are taught very rarely correspond to the contexts in which the language will later be used. There are practical limitations on the simulation of contexts within the classroom.

These objections might not apply to the same extent if a psycholinguistic approach to the functions of language is adopted. Because the analyst will be attempting to draw up his taxonomy of functions from a position inside the head of the speaker (or addressee), might it not be possible to think of situational context in abstract terms, or ignore it altogether? Effectively language functions would be seen in terms of speaker intentions and the taxonomy would consist of different kinds of illocutionary force or perlocutionary effect. For a pedagogic grammar, speaker intention as the basic viewpoint would seem to be a reasonable one. Every time a person speaks he has some intention, and the learner, as addressee, needs to be able to interpret correctly the intentions of speakers of the foreign language, as well as be able to express his own intentions. This is the Speech Act theory of Austin and Searle, and within the transformational framework Ross has suggested imposing a performative on the structural description and semantic interpretation of every sentence. But in drawing up a taxonomy of speech functions, how is a line to be drawn, except in an arbitrary manner, between for example, a suggestion, advice, a request, and even an order? "In general there is no precise typology of speech acts . . . If we try to find one we will merely make our judgement dizzy."[2] And in what terms are these categories to be expressed, except, inexactly, by attachment to a linguistic form? But linguistic forms extracted from context are not readily attached to any specific category of speech act. An utterance like

Sit down

has to be seen as having an infinite variety of illocutionary forces ranging from the mildest suggestion to a forceful command. It could even be a question, or a comment.

Given a variety of specified contexts an utterance like

It is raining

could variously be interpreted as:

a) Perhaps our visitors won't come
b) How awful that we have to go out
c) I'm going to take refuge in this shop
d) Please close the window
e) Take your umbrella
f) Shall I take in the washing?

In Deirdre Wilson's terms these are pragmatic implications yielded by the utterance through the interaction of the propositions contained within the utterance with the propositions provided by the context, context here including the knowledge of the world shared by speaker and hearer. But even if a theory for the analysis of utterance interpretation can be developed within these terms, the task facing the writer of a pedagogic grammar seems hopeless. Not only is he faced with the task of attempting a typology of speech acts, but he has to provide it in a contextual vacuum. An attempt to include context within the grammar would mean incorporating within it an encyclopaedia.

That would not be necessary however, if speech acts are limited to the two categories I outlined in my first paragraph, that every utterance is intended either to give information, or as part of a negotiation. It is possible to maintain such a distinction while ignoring context, and the distinction itself can possibly be made without so much fuzziness as to render the two categories valueless or incapable of definition. The various interpretations I have suggested above for *It is raining* can easily be divided along these lines, as too could other interpretations of the same utterance. But what makes this distinction so attractive is that, for English at least, when attempting to relate form to meaning, the analysis of certain areas of grammar appear to be enormously simplified if this approach is adopted. And for a pedagogic grammar simplicity must surely be an important criteria for adequacy.

One such area of grammar is the modals. Within these terms a sentence like

You could teach the class of intelligent students

isolated from context, can ambigously be interpreted as either informing the addressee of something the speaker feels he may not know, or it is some kind of suggestion or request. Analysing *can* within this framework will lead to a simplification of the many meanings normally associated with this verb in grammars. The modal *must* is given two meanings by Quirk, Greenbaum et. al.[3] which they describe as obligation and logical necessity, whatever that may mean. I would wish to argue that the effect of *must* is to introduce an element of obligation into an utterance if it is intended as one of negotiation and the effect of *must* is a logical necessity if the utterance is intended as one of information, but the essential meaning of *must* remains constant. The crucial factor is whether the utterance is intended as negotiation or information. This can be illustrated by setting out the two basic interpretations of

You must love your mother

as 1) speaker conviction + you love your mother + information
2) speaker conviction + you love your mother + negotiation

"Speaker conviction" here stands as the synonym for must.

I am not here concerned with examining the precise underlying meaning of the modal or how it is to be represented in a grammar, but if an utterance containing the modal is intended as one of information, then, in our example, the role of *must* is to add something to the proposition *you love your mother*. On the other hand, if the utterance is intended as one of negotiation, then the proposition expressed by *you love your mother* stands, and the role of *must* is to alter the behaviour of the addressee.

To conclude this section one or two general points can be made. An examination of the other English modals will reveal that they all lend themselves equally well to this treatment, though difficulties will be encountered in specifying a precise underlying meaning for each modal. This approach will redraw the line between grammar and pragmatics that those in the transformational school have drawn for example, but there is still a distinction to be made between language and linguistic rules in the abstract, and language in use. A pedagogic grammar will mostly be concerned with the former, but may have comments to make on language in use. For example, once an addressee has decided in a particular conversation, that an utterance containing *must* is intended as one of negotiation, then he also has to decide on the degree of obligation that is intended, and this will be influenced by such factors as the status relationships between the speaker and addressee. Pedagogic grammars may need to comment on such factors, though clearly conventions rather than rules are involved, and the conventions will need to be fuzzy.

The whole approach is not unlike that suggested by Halliday as early as 1970. He claimed that the organisation of language was such as to reveal three basic functions – the ideational, the expression of ideas; the interpersonal, interaction between people; and the textual, the interaction of language with itself and its situational context. He saw every sentence as containing an idea, a particular relationship to the listener, and a relationship to context, and linguistic description would provide three simultaneous analyses for each sentence to reflect three functions. This paper claims that utterances are intended either to express an idea OR to get the listener to do something.

Both the ease and difficulty of establishing these two speech act categories of information and negotiation can be illustrated by the following conversation, taken from the novel *Brideshead Revisited* by Evelyn Waugh (1945: 58). The narrator, an undergraduate at Oxford, has just returned home for the holidays, having overspent his annual allowance in the nine months of the academic year:

> "One of the problems of the vacation is money, father."
> "Oh, I shouldn't worry about a thing like that at your age."
> "You see I've run rather short."
> "Yes?" said my father without any sound of interest.

"In fact I don't quite know how I'm going to get through the next two months."

"Well I'm the worst person to come to for advice. I've never been 'short' as you so painfully call it. And yet what else could you say? Hard up? Penurious? Distressed? Embarassed? Stoney-broke? On the rocks? In Queer Street? Let us say you are in Queer Street and leave it at that. Your grandfather once said to me, 'Live within your means, but if you do get into difficulties, come to me. Don't go to the Jews.' Such a lot of nonsense. You try. Go to those gentlemen in Jermyn Street who offer advances on note of hand only. My dear boy, they won't give you a sovereign."

"Then what do you suggest my doing?"

"Your cousin Melchior was imprudent with his investments and got into a very queer street. *He* went to Australia."

The comic effect of this passage derives in the first place from the father's insistence on interpreting an utterance of negotiation as one of information, and then when he is forced to acknowledge that a negotiation is involved, he insists on interpreting it as a request for advice rather than as a request for money. But even then he continues to give information. Implying that his own father had always been willing to give financial assistance he advises against applying to the Jews as it would be a waste of effort. Finally, when he is forced to give advice, it seems inappropriate to the circumstances. From the point of view of our theory, this passage would seem to indicate that the line between utterances of negotiation and information should not be too rigidly drawn. Every conversational interaction involves rules for speaking which itself implies some type of negotiation, perhaps of a different and underlying kind.

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FOOTNOTES

1. Smith & Wilson (1979:22).
2. Matthews (1979:82).
3. Quirk et al. (1972:101 f.).

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ON THE DISTINCTIONS OF ITEM LEARNING VS. SYSTEM LEARNING AND RECEPTIVE COMPETENCE VS. PRODUCTIVE COMPETENCE IN RELATION TO THE ROLE OF L1 IN FOREIGN LANGUAGE LEARNING

Foreign language learners are frequently told by their teachers, and rightly so, that it is absolutely essential to have a good mastery of the fundamental elements of another language. A sufficiently stable construction, it is said, can be erected only if the basis is solid enough.

In the light of this one might expect the very beginnings of the foreign language learning process and the development of a basic receptive competence to have attracted more attention by applied linguists than they actually have. Applied linguists have, however, been primarily concerned with the development of the grammatical system of the learner's interlanguage, and the material for their analysis often appears to have been confined to that type which most clearly illustrates each scholar's ideas about this system or these systems. Frequently, too, applied linguistic studies have been very restricted in that they have dealt with only one narrowly defined system, say, learners' production of negative sentences or relative clauses.

At the very start of his learning, the foreign language learner can, however, not start learning the L2-systems directly. In order to be able to do that he first has to know a number of items. This distinction between system learning and its necessary prerequisite, item learning, is one that has recently been made by Alan Cruttenden (1981). Cruttenden's distinction applies to the child's learning of his L1, but it seems worth discussing its possible importance also for the learning of foreign languages.

According to Cruttenden, item learning "involves a form which is uniquely bonded with some other form or with a unique referent, whereas system-learning involves the possibility of the commutation of forms or referents while some (other) form is held constant. The two stage process applies to phonology, intonation, morphology and syntax, and semantics" (1981:79) ... "Learning takes place initially on an item by item basis at all levels of language." (1981:87).

Before Cruttenden's distinction is applied to foreign language learning, the differences between the L1-learner and the L2-learner have to be discussed. The cognitive make-ups of the L1-learner and the (adult) L2-learner differ a great deal, above all in that the L2-learner already has internalized and automatized a well-developed language system on which he can draw.[1] When discussing item learning in particular, we must take account of this already existing system. Whereas a new item in the L1-learner's item learning is narrowly situation-bound, in lexis generally to one concrete referent in the outside world, the beginning L2-learner, particularly in a classroom situation, will tend to relate new items to perceived L1-translation equivalents. In foreign language learning, thus, the unique bondage characteristic of item learning can be merely cross-linguistic, in that the learner assumes full equivalence between an L1-item and an L2-item. An item in this sense can be a phoneme, a morpheme, a word, or even a phrase, as in 'tourist survival language'. A tourist with a minimal foreign language proficiency has simply memorized some useful phrases like 'Where is the toilet?', 'Do you speak English?' or 'I don't understand' without being able to construct them from his linguistic L2-system. Hakuta (1974, 1976) calls such utterances 'prefabricated phrases'.

In closed systems like phonology and morphology, item learning is a stage which does not normally last very long for the foreign language learner, at least not if the target language is genetically close to his L1. A learner easily perceives cross-linguistic equivalence between phonological and morphological items, if the L2-items are formally similar to L1-items with approximately the same function and meaning. Most learners achieve at least a receptive competence with phonological and morphological items in a related language within a short time, even though their own production of these items may be very imperfect.[2]

In grammar, the perceived functional equivalence between linguistic categories is especially important. Equivalence between individual lexical items is difficult to perceive without equivalence between categories. Finnish makes use of a complex network of lexical, syntactic (e.g. word order) and morphological devices to express (in)definiteness, and the Finnish case endings have a much wider range of functions than English prepositions. This means that a Finnish learner, who is not used to the categories of articles and prepositions, finds it difficult to relate these high-frequency words to any previous knowledge he has. Whereas Swedish learners of English easily perceive the basic equivalence between English and Swedish prepositions and between English and Swedish articles, the Finnish beginning learner cannot get much help from his L1 in these respects. It is also a well-known fact that Finns have especially noticeable learning problems with English prepositions and articles.[3]

In the open system of lexis, item learning is not confined to the early stages of learning, but goes on throughout the learner's life. To the scientist who for his professional purposes learns Russian, item learning is of prime importance. He already masters the field and its L1-items and he can fairly safely rely on translational equivalence between scientific L1-items and L2-items. The beginning foreign language learner, on the other hand, has to oversimplify a great deal when establishing translational equivalences. Much of the system learning he has to tackle later, in fact, consists of a modification of these early assumed equivalences, when he finds that they work only to a very limited extent. He realizes, for instance, that the English word *head* is not always the equivalent of Swedish *huvud*, but sometimes may correspond to, for instance, *höjdpunkt*, *spets*, *chef* or *ledare*. The more the learner progresses, the more he perceives the inadequacies of these equivalences perceived initially.

At the beginning of his learning, then, the L2-learner learns new lexical items by associating them with either previously known, often formally similar L1-items or with actual unique referents in the real world. The latter may be a dominant procedure in second language acquisition, but in a formal language learning context establishing translational equivalences to L1-items is probably the adult learner's dominant way of learning new words. In fact, the emphasis on the importance of the L1 for L2-learning in this paper should be seen against the background of a *foreign* language learning environment, like English in Finland, where the target language is not spoken in the learner's immediate environment and where the learner learns in a classroom and/or by self-study.

An essential element of the learner's progress in the field of vocabulary learning is that he learns to make new semantic associations, elaborations and modifications, all the time making more and more use of his newly acquired L2-knowledge and depending less on his L1-knowledge. Also, it has been suggested that the more a learner advances in his learning, the more he organizes his foreign language lexicon on the basis of semantic network associations rather than on formal similarity.[4] Formal similarity here would apply to both cross-linguistic and intra-L2 associations. The formal and functional similarity to L1-items makes L2-items more readily perceived as equivalents.

Perceived cross-linguistic equivalence, often assumed on the basis of formal similarity, must be regarded as all-important for the building up of an initial receptive competence. For productive competence, on the other hand, perceived equivalence may not have the same significance. In fact, receptive and productive competence are not affected in exactly the same way by what is perhaps the basic principle underlying language learning: that the learner tries to facilitate his learning wherever possible by making use of any relevant prior knowledge (including L1 and possible other languages[5]) he has for the task. Insufficient regard to this distinction is perhaps one reason for the somewhat surprising fact that some linguists doubt the common-sense view that it is easier to learn a related language than an unrelated one.[6]

To illustrate the difference in achieving receptive competence in related vs. unrelated languages, let us imagine four Swedish learners (identical quadruplets with no previous knowledge of any other language than the L1!) learning Danish, English, Finnish and Chinese respectively.

The learner of Danish will have little or no problem in acquiring a receptive competence. He has internalized a wide knowledge of Danish even before he has ever been confronted with any piece of spoken or written Danish at all and does not have much learning to do. Even without any teaching at all a Swede can understand all or nearly all of an ordinary written Danish text at first sight and the times he has to resort to a dictionary or other similar aid are very few. The cross-linguistic formal and functional similarities are obvious almost everywhere, and a little teaching focussing on the differences between Swedish and Danish pronunciation and some of the 'false friends' will yield good results in a matter of days. After a week or two of immersion in a Danish-speaking community the Swedish learner will usually have no difficulties in understanding spoken Danish, at least not if his interlocutors make an effort in adjusting their speech a little by articulating more clearly than when speaking to other Danes.

The Swede learning English is not quite so fortunate. However, he, too, may acquire a basic receptive knowledge of English within a relatively short time if he works hard. His problems in comprehensiion will lie primarily in the area of lexis: although he will be immediately able to understand the meaning of a fair number of words which are similar in English and Swedish, a great many common words are so dissimilar that he cannot immediately work out what they mean. Yet he will fairly quickly, perhaps in a couple of months or so, reach the stage where he is able to read a simple English text and get a rough idea of what it is about.

The learner of Finnish, on the other hand, is up against a much more difficult task. The long words, the many case endings with their different functions, and the general lack of any recognizable formal similarities at all between Swedish and Finnish words (apart from a few low-frequency loanwords) force the learner to a very slow item-by-item procedure of learning at the beginning. Only the very diligent and very talented Swedish learner will have acquired even a basic receptive knowledge after half a year, and the cultural similarity between Sweden and Finland does not help him very much.

By far the greatest problem, however, faces the learner trying to learn Chinese. The linguistic (and the cultural) distance between Swedish and Chinese is enormous, and one year would probably be the minimum length of time required for the Swedish learner to reach the stage of understanding even simple Chinese.

It appears that the main problem for the learner attaining a receptive foreign language competence lies in whether he is able to establish equivalents to basic linguistic categories and to individual items in his L1. Where such equivalents are easily perceived, as they are between related languages, the task is of smaller magnitude[7] (or, phrased in different terms, there is much positive transfer) and the time of learning is considerably reduced. The learner of a related language simply has less to learn.

For productive competence, however, it is less absurd to claim that L2-learning is hindered rather than helped if the two languages are closely related. As Ingram (1975:273) points out, however, this belief "probably derives from the fact that observers impose different standards. English people settling in Japan or vice versa, are rightly admired if they manage to sustain their part in any conversation so that communication is achieved at the required level. For a 'difficult' language this represents a great deal of learning, but a Norweigian can settle in Sweden and function at a similar level without doing any learning at all, beyond a few concessions on certain vocabulary items and phrases."

The high standard aimed at in L2-learning within the group of Western European languages, i.e. near-native, practically error-free production, is a stage only a very small percentage of foreign language learners ever reach. The traces of L1 in most learners' L2-production is, however, only one side of the coin: the considerable positive transfer effect is forgotten, since it is not easily noticeable.

Theoretically there is, of course, the possibility that the productive and the receptive skills are different from each other with little interaction between them. In the light of recent discussions (see e.g. Oller 1979:424 ff.) favouring the idea of a unitary language competence rather than the division of language skills into distinct components corresponding to those suggested by discrete-point testers, such a view is hardly tenable. There simply must be much interaction between receptive and productive skills during the L2-learning process: comprehension precedes production and items pass from the learner's receptive vocabulary store to his smaller productive one all the time, some items perhaps moving back again from the productive to the receptive one, when the learner forgets items he has once mastered but has not met very frequently or recently. In order to build up a productive competence it is easier for the learner if he can anchor his learning in some kind of previous L2-knowledge rather than having to start from scratch. If the learner already has a basic receptive competence, this undoubtedly provides a useful foundation for him.

The two distinctions of item learning vs. system learning and receptive competence vs. productive competence may make it worthwhile to have another look at the Contrastive Analysis Hypothesis (CAH) in its strong version.

According to classics like Uriel Weinreich (1953) and Robert Lado (1957), the bigger the differences between languages, the greater the difficulties for the learner will be. Although the discussion above has, I hope, made it clear that generally speaking the learning of a related language requires much less time and effort than the learning of an unrelated one (Cf. Corder 1979, Cleveland et al. (1960)), examination of details of specific languages has led to strong criticism of the theoretical and methodological assumptions of this strong version of the CAH.

The only area where the view that linguistic difference equals learning difficulty has escaped with only minor blemishes is phonology. Lehtonen summarizes the role of the CAH in phonology in the following way:

> "On the level of the production and perception of concrete speech, the strongly criticised or often refuted claim of Weinreich's (1953:8) to the effect that 'the greater the difference between the two systems, i.e., the more numerous the mutually exclusive forms and patterns in each, the greater is the learning problem and the potential area of influence' is quite acceptable ... At the initial stage of foreign language studies, the amount of incorrectness in the pronunciation of the student correlates positively with the amount of phonetic difference between the target language and the native language. The problem is what method of contrastive analysis should be applied for the prediction and explanation of this kind of interference (1977:32)8.

It seems to me that the linguist's distinction between phonology, where the CAH on the whole works, and grammar and lexis, where it apparently does not work in details, might be replaced or at any rate supplemented by the distinction between item learning and system learning. The key question about the early stage of foreign language learning refers to the learner's perception of foreign language items and could perhaps be phrased in the following way:

How naturally can equivalences for items and linguistic categories be established between the L1 and the L2?

If we substitute the concept of perceived equivalence between items for the concept of linguistic difference we have placed the problem of the CAH wholly within the framework of learning processes where it clearly belongs. We remember that an important criticism of the strong version of the CAH was that it is highly problematic to bridge the gap between the psychological concept of learning difficulty existing in the learner's mind and the purely linguistic concept of differences between languages.

If cross-linguistic equivalences, though often oversimplified, can be easily perceived by the learner, as they normally can across related languages, the initial stage of item learning is greatly facilitated. But we must remember that we are dealing not with the linguist's definition of equivalence, whatever that may be, but with equivalence as the learner perceives it, and there is, of course, enormous variation between individual learners.

Kellerman (1977), Sharwood Smith (1979) and others have emphasized the importance of perceived language distance for the L2-learner. That the distance is perceived rather than 'real' puts the learner into focus, and this may well yield a wider perspective than the strictly linguistic concept of difference between languages. In the words of Juliane James, "It is not only relevant whether L1 and L2 actually differ or are the same at a particular point or not, but rather whether the learner expects or believes this to be the case. It is the learner's attitude and expectation that determines transfer or generalization within L2." (1977:12). The smaller the perceived distance between the L1 and the L2, the more relevant this prior L1-knowledge is to the learner, especially at the early stages of learning, that is, above all item learning and the mastery of a receptive competence.

The differences between learning a related and an unrelated language are to a very great extent the differences in the ease of acquisition of a basic receptive competence entailing a knowledge of a sufficient number of items at all linguistic levels. Item learning for receptive competence is greatly facilitated by the existence of corresponding linguistic categories and of cognates in the L2, between which cross-linguistic equivalence can be easily perceived.

To conclude, then: Formal and functional similarities, which are frequent between related languages facilitate the perception of cross-linguistic equivalence between individual items (phonemes, morphemes, words and phrases) in L1 and L2. The beginning foreign language learner makes frequent use of these perceived equivalences when he learns to understand the items of L2, and this receptive competence in its turn provides an important basis for building up a productive competence. The mastery of L2-systems for use in production may not in itself be directly facilitated by cross-linguistic formal similarities. For learners of a related L2, too, there are inevitable and considerable learning problems, caused not least by "patterns minimally distinct" (Oller & Ziahosseiny 1970:186), but the learner who can easily perceive cross-linquistic equivalences does not need a very long time to build up a basic receptive competence with a knowledge of a fairly large number of items. Converting this receptive communicative competence into a productive one, the learner of a related L2 will undoubtedly make a lot of errors. However, we may at least hypothesize that most of these errors will not affect communication as seriously as errors made by learners whose L1 is very distant from the L2, although they may cause considerable irritation.

FOOTNOTES

1. There is also a difference between what these two learner categories have to learn. Basically, the L2-learner needs to learn only new labels for familiar concepts, whereas the L1-learner has to learn the concepts as well.
2. Cf. Mackey (1965:109): "If a learner ... is learning simply to understand the language, the greater the similarity between the first language and the second, the easier the latter will be to understand. In using the language, however, it is the similarity that may cause interference by the misuse of such things as deceptive cognates."
3. See e.g. Ringbom (forthcoming), Herranen (1978), Granfors & Palmberg (1976) for details about learning problems for Finns and the differences between Finnish and Finland-Swedish learners. Cf. also Oller & Redding (1971:90 f.): "G1 (students whose native languages have formal equivalents) performed better on the test of article usage than G2 (students whose native language did not have equivalents for the English articles). The differences ... were statistically significant."
4. See Meara (1978), Cook (1977) and Henning (1973).
5. See Ringbom (forthcoming) for a discussion of differences between L1-influence and influence from other languages as they are manifested in the L2-production of foreign language learners.
6. See e.g. Winitz & Reeds (1975:69): "We believe that the more two languages differ in structure the more rapid the acquisition of the second language."
7. See Corder (1979).
8. Cf. also Brown (1980:157): "In fact, it is really *only* in the phonological component of language that contrastive analysis is mildly successful."

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PROBLEMS IN "MEASURING" L2-LEARNING STRATEGIES

Theoretical background

It is generally assumed that strategies are resorted to when the learner/speaker experiences a problem in conveying a certain meaning in L2. Some linguists have thus seen the use of a strategy as a result of ignorance. According to Krashen (1981:56) for instance, the use of L1 features in L2 is a way of performing without competence. But within the interlanguage framework, where learning is defined not exclusively with reference to the target language norm, the use of, for instance L1-transfer strategies, is to be seen as a natural step in the learner's progression towards the target language. Thus, it seems as if the concept of L2-learning strategies fits excellently into the theoretical framework of interlanguage. A few words about interlanguage as it has been looked upon in this paper is therefore considered necessary.

In all definitions of interlanguage (IL), 'system' and 'systematic' have been very central. Richards & Kennedy for instance, talk about interlanguage as a dynamic linguistic system, resulting from regular and systematic applications of rules, strategies and hypotheses (1977:14). Selinker, Swain, & Dumas argue that systematicity in IL cannot mean "the features of speech which are predictable by grammatical rule on a given occasion." (1975:141). Because of the developing, unstable nature of IL, they suggest that systematicity means that second-language speech is the result of recognizable strategies. Adjemian on the other hand, argues that IL systems share most of the properties of natural languages; the key difference is that IL systems possess the property of permeability (Adjemian 1975:318). The implication of Adjemian's view is that the research tools developed by theoretical linguists are basically applicable also in IL research. The view taken here is that it would be too idealistic to attempt a purely linguistic description of IL systems and rules for at least two reasons.

Firstly, because of the transitional nature of IL systems; the IL systems are probably not to be described as such a unitary, well-defined system as the native language. This is true especially of the early stages developed in a formal setting. This would mean that IL often takes the form of being a collection of a number of more or less regular 'subsystems', which do not constitute a coherent whole in the same way as natural languages do. Secondly, the systems are, as Corder has repeatedly pointed out, idiosyncratic in character, which means that all learners have their own, unique "IL grammar". It has also been alleged that purely linguistic descriptions of IL rules are inappropriate for language teaching/learning purposes because they can hardly give any information beyond the linguistic product level (Sajavaara & Lehtonen 1979; Chesterman 1980). To give a truer picture of the learning processes, a supplementary, psychologically and sociologically oriented method of inducing information about the learner's perception and production strategies is required. There seems in other words to be a need to extend the strictly linguistic and code-centred meaning of IL systems to cover also mental processes as perceived by the learner himself. So interlanguage systems should not be defined as covering only the relatively stable configurations of the learner-language that might be called the IL norm (cf. Adjemian 1975). It might be profitable to include also the less stable, and more variable elements of the learner-language, as well as potential IL forms and strategies. In fact, what is the most important task of IL studies is to find the permeable parts of IL and try to find out why certain elements tend to become fossilized (Selinker & Lamendella 1978). Faerch & Kasper have characterized interlanguage as consisting of firstly *unanalysed chunks*, i.e. L2 items that have been stored without being analysed into underlying constituents as "prefabricated" patterns". Secondly the IL system includes *hypothetical rules* referring to hypotheses the learner has set up for himself about the nature and the regularities of L2. These two components of the IL system constitute the parts that are subject to changes i.e. they are permeable. The third component, on the other hand, the *fixed rules*, is stable and consists of hypothetical rules that are believed to have been confirmed (Faerch & Kasper 1980:63).

The focus of this paper will be on the permeable parts of IL. Learning is here seen as an ongoing process of testing and forming hypotheses on the basis of previous experiences about languages, especially the target and the native language, but also the general knowledge of the world. Thus learning can be seen as a planned activity, similar to intellectual behaviour and problem-solving. A planned, goal-oriented behaviour, presupposes the mental capacity of anticipation of the goal as a result of an action. A model of the kind suggested above has been set up by Faerch & Kasper (1980). According to them learning (and human behaviour in general) starts out from a goal the learner has set up for himself. This goal initiates a planning process which leads up to a plan or strategy to achieve the goal. The next phase is the realization process which is controlled by the plan or strategy. The result of the realization process is an action or in terms of IL a hypothetical rule/form. It should be noticed that a clear distinction has been made between process and strategy. Faerch's and Kasper's definition of strategy as "a potentially conscious plan for solving what to the individual presents itself as a problem in reaching a particular goal" (1980:60) seems to suit the theoretical framework put forward here.

Purpose and problems of the study

In this paper I am going to discuss some problems in "measuring" the results of psycholinguistic L2-learning. Psycholinguistic L2-learning here implies learning resulting from hypothesis formation i.e. when the learner induces what a hypothetical rule might look like on the basis of input data and prior knowledge (Faerch & Kasper 1980:68). Plans controlling the psycholinguistic activity leading to hypothesis formation may be called psycholinguistic plans and the corresponding learning strategies *psycholinguistic strategies*. More specifically I am going to touch upon some problems I myself faced in attempting to interpret the results of some tests on L1-transfer strategies among Finnish- and Swedish-speaking learners of English. The general aim was to estimate the effects certain factors have been alleged to have on L1-transferability.

The factors investigated were the following:

1) the distance between L1 and L2
2) the stage of learning
3) the type of elicitation techniques used
4) the degree of markedness of potentially transferable items

Populations and data collecting techniques

The study comprised subjects from three different learning stages. The same tests were sent to a number of Finnish- and Swedish-speaking schools in different parts of the country. The test populations were as follows:

	Number of Finns	Number of Swedes
Learning stage 1: Pupils who had completed the first form of the Finnish senior secondary school	109	164
Learning stage 2: Pupils who had completed the second form of the Finnish senior secondary school	96	148
Learning stage 3: Pupils who had passed the Finnish national matriculation examination	104	102
Total	309	414

One may argue that in most natural situations where we are exposed to L2 data, the primary goal for the speaker/learner is not to learn more about the structure or lexical items of the target language. In the artificial classroom situation, however, it seems to be fairly common for the learner to be involved in a pure learning situation i.e. where the explicit goal is to learn more about L2. The language tests in the classroom for instance are good examples of situations where the learner is often obliged to try to expand his linguistic repertoire in L2. It could of course be argued that strategies used in such situations are to be called 'test-taking strategies' rather than learning strategies. In this investigation it has been assumed that it is possible to simulate psycholinguistic learning (i.e. hypothesis formation). This has been done by creating situations in which the criteria for using learning strategies are satisfied. The criterion of problem-orientedness was satisfied by constructing two tests (see appendix 1-3), one on prepositions and another on idiomatic collocations, compounds, expressions with metaphorical meaning, turns of speech and the like (cf. definition of strategy above). Because items of this kind very seldom are taught at school, the effect of teaching is controlled. To find out when learners had faced difficulties, they were asked to report how certain they felt about the correctness of their answer immediately after their responses (scale 1-5).

In the test on prepositions, the learners' own perception of their difficulties was estimated as well. To get information about this, the learners were asked to report on possible sources of influence. They were requested to do this immediately after their responses, but only when the item was problematic (i.e. when they were not certain about the correctness of the answer). A list of "plausible" sources of influence was given to choose from (see appendix 2). This is of course a very crude instrument, and it might even be a questionable procedure to force the learners' responses into the analyst's mould of ready-made sources. There was, however, an open, unspecified category for those who did not accept any of the sources suggested by the analyst.

Data analysis

First we shall look at the error data collected from the tests on prepositions mentioned above. The figures are presented so as to show the percentage of errors committed on different levels of certainty (as reported by the subjects) separately for the multiple choice (MC) and completion items (CL). The MC and CL tests were exactly the same and the test situation was arranged so that possible differences in the results must be due to the effect of the different test techniques used (see Sjöholm 1982:91). The results are compiled in table 1 a-b below.

The following abbreviations are used: CC = completely certain, FC = fairly certain, FU = fairly uncertain, and CU = completely uncertain (in later tables).

It is of course a hazardous matter to draw any definite conclusions on the basis of these error data, but the following could perhaps be stated.

Finns make, on the whole, considerably more mistakes on prepositions than Swedes. This could perhaps be interpreted as support for the language distance hypothesis i.e. that Finns find English prepositions hard to cope with because there is no reference frame in Finnish (prepositions are almost

Table 1. **Mean percentage of errors on prepositions for different degrees of certainty**

1 a. Multiple choice items

	CC		FC		FU		Total		Diff
	Sw	Fi	Sw	Fi	Sw	Fi	Sw	Fi	Sw/Fi
Stage 1	34.6	57.5	59.0	62.2	68.3	72.8	53.4	67.5	-14.1
Stage 2	34.8	50.7	58.4	68.3	68.3	65.0	52.9	64.0	-11.1
Diff	-0.2	6.8	0.6	-6.1	0.0	7.8	0.5	3.5	

1 b. Completion items

	CC		FC		FU		Total		Diff
	Sw	Fi	Sw	Fi	Sw	Fi	Sw	Fi	Sw/Fi
Stage 1	34.4	59.1	64.2	78.4	74.3	82.7	60.6	80.1	-19.5
Stage 2	37.3	52.2	62.0	74.1	74.6	79.6	60.4	74.2	-13.8
Diff	-2.9	6.9	2.2	4.3	-0.3	3.1	0.2	5.9	

lacking in Finnish). The fact that the proportion of errors is as high as 50-60% in the category of completely certain responses (as reported by the subjects themselves), does also indicate that Finns face considerable organizational problems in coping with prepositions.

Secondly, it can be noticed that there has not been any great improvement from the first to the second learning stage as regards the correctness of the answers (almost none at all among Swedes). The table also indicates that Finns are gradually coming to terms with their organizational problems in the second learning stage and are clearly catching up with the Swedes.

Thirdly, it can be established that completion items have been more difficult than multiple choice items. This is perhaps not surprising, since taking a multiple choice test involves only the mental process of identification or selecting among given alternatives. Additional retrieval processes are required for solving a completion item.

To conclude, we may say that the figures in table 1 indicate a discrepancy between the learners' own evaluation of the results and the observer's (the analyst's) evaluation (cf. Kellerman 1977:72). The Swedes were in actual fact mistaken in 35-37% of the cases in which they had judged an item correct with a hundred per cent certainty and the corresponding figures for the Finns were as high as 50-60%.

What is really important in L2-learning, however, is the learner's own beliefs about the character of L2 and his beliefs about the relationship between L1 and L2. As the focus of this paper is on the detection of possible strategies, it was considered important to find out what type of 'errors' the subjects committed in different stages of learning. It is of course equally interesting to find out the type of correct answers the subjects gave. For this purpose the distractors (incorrect alternatives) as well as correct alternatives in the multiple choice test were, on contrastive grounds, categorized as 1) Swedish-bsed, 2) Finnish-based and 3) non-Swedish/non-Finnish-based (cf. Sjöholm 1979). By counting the number of Swedish- and Finnish-based alternatives and distractors occurring in the test, the expected or *theoretical distribution* (TD) of these categories was arrived at. If for example 25% of the incorrect alternatives in the test were Swedish-based (= TD), it could be expected that the proportion of actually given responses would be the same, if the test was properly done. If the responses deviated considerably from the TD, it was taken as an indication of a strategy, provided that the deviation was focussed on the less certain responses. A similar categorization was made among the responses in the completion test.

The percentage (i.e. the proportion of all "errors" in the category) of Swedish-based, erroneous responses is illustrated in the diagrams below.

A quick look at the diagrams above seems to reveal that the strategy of L1-transfer is in frequent use among the Swedes. Although the curve descends towards the less certain end of the scale, the percentage of selected Swedish-based responses is, on the whole, between 40 and 50%, which is considerably more than expected (TD = 25%). It should be noticed, however, that as far as the completion items are concerned, the TD calculated on the basis of the occurrence of distractors in the MC test cannot be used as a reference point. But using the Finns as a control group shows that Swedes have chosen Swedish-based responses among the completion items considerably more often than Finns (the difference is 15-20%). This has been interpreted as an indirect evidence of the effects of the L1-transfer strategy among the Swedes.

The diagrams also indicate that the test technique affects the test results. The multiple choice technique seems to increase the use of Swedish-based responses among Swedes as well as Finns. A tentative conclusion would then be that the presence of Swedish-based distractors in a test increases the attractiveness of L1-transfer among Swedes. There also seems to be a slight trend for Finns to use Swedish-based distractors if they are available.

Fig. 1 a. Proportion of Swedish-based erroneous responses made by Swedes and Finns in learning stage 1

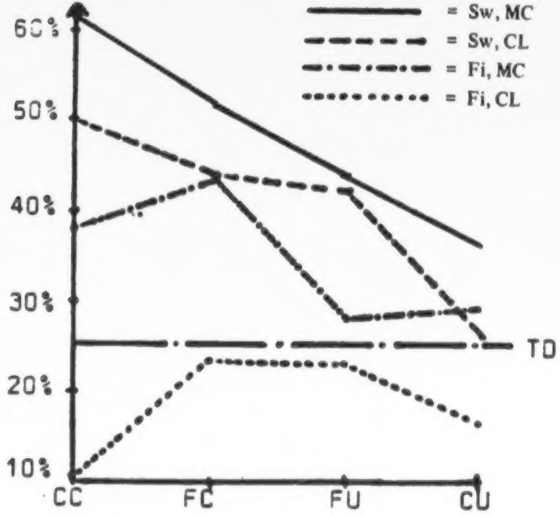
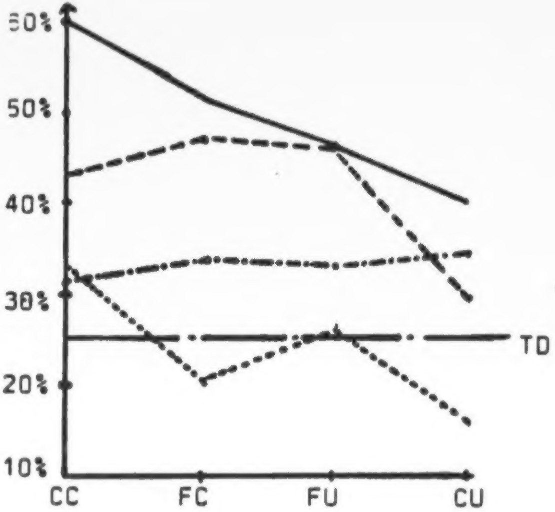


Fig. 1 b. Proportion of Swedish-based erroneous responses made by Swedes and Finns in learning stage 2



Interestingly enough, the proportion of Swedish-based distractors selected is the largest in the category "completely certain" among the Swedes. This probably implies that Swedes are very often quite unaware of their "transferring" anything from Swedish. To be completely certain may also suggest that the Swedes cannot see any reason not to transfer, because their previous experiences of the contact between English and Swedish speaks in favour of transfer.

A correct response is not necessarily evidence of knowledge on the part of the learner. It was therefore felt urgent to analyse the correct answers as well. The correct, Swedish-based responses are illustrated in the diagrams below for different degrees of certainty.

The diagrams below (fig. 2a & 2b) suggest that Swedes and Finns tended to select Swedish-based solutions (i.e. correct ones) approximately to the same extent when they reported that they were completely certain. No trends could be seen here, which perhaps implies that the subjects were knowledgeable with respect to these items. The diagrams also suggest that the more the Swedes grew uncertain, the more they tended to choose Swedish-based alternatives. A tentative conclusion would then be that the Swedes in some cases have used the L1-transfer strategy successfully (positive transfer) and have strictly speaking not been knowledgeable. By comparison, the Finnish control group did not follow the same pattern.

Because of lack of space, no diagrams will be drawn for the Finnish-based responses. The results showed, however, that the Finns did not have any great appetite for Finnish-based solutions, whereas Swedes clearly avoided them, especially in the less certain end of the scale.

One of the aims of this study was also to find out how the L1-transfer strategy developed over time, if it did. In the figures below (fig. 3a-d), stage 1 and stage 2 are plotted down for comparison.

Fig. 2 a. Proportion of Swedish-based correct responses made by Swedes and Finns in learning stage 1

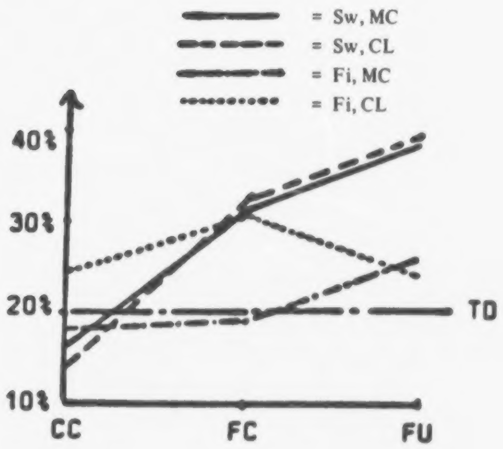


Fig. 2 b. Proportion of Swedish-based correct responses made by Swedes and Finns in learning stage 2

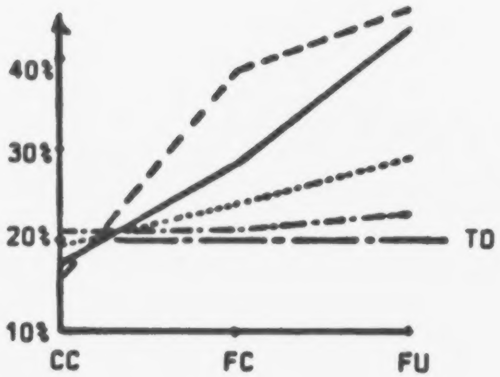


Fig. 3 a. Proportion of Swedish-based erroneous responses made by Swedes in learning stage 1 and 2 in MC test

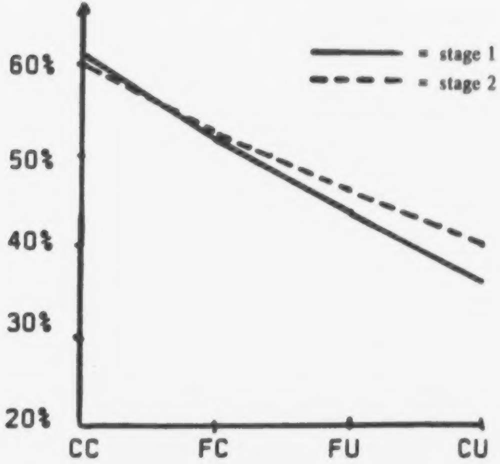


Fig. 3 b. Proportion of Swedish-based erroneous responses made by Swedes in learning stage 1 and 2 in CL test

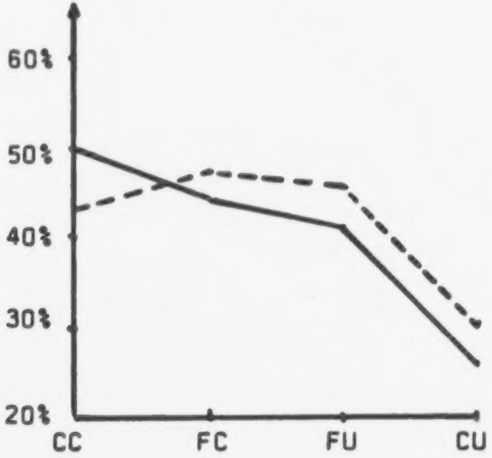


Fig. 3 c. Proportion of Swedish-based correct responses made by Swedes in learning stage 1 and 2 in MC test

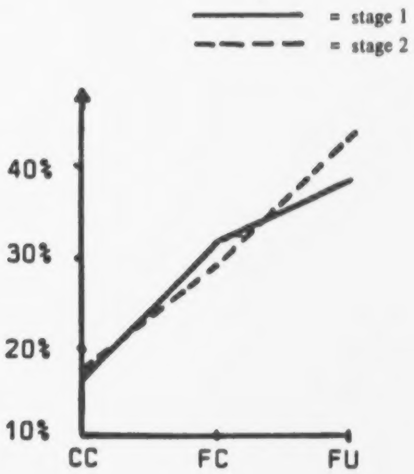
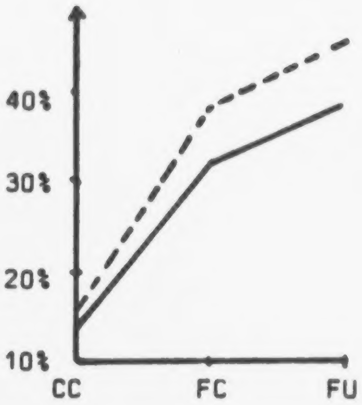


Fig. 3 d. Proportion of Swedish-based correct responses made by Swedes in learning stage 1 and 2 in CL test



Not quite unexpectedly, the Swedes showed a tendency to use more L1-transfer in the later stage. The trend is not very strong, but can be seen among correct as well as incorrect responses in the less certain end of the scale. The explanation of the increase of transfer is quite simple. The learner in the second learning stage has got substantially more support for the hypothesis that the prepositional system of Swedish is basically the same as that of English.

In table 2 below, these figures were checked against the learners' own report on possible sources of influence (see Sjöholm 1982:96).

Table 2. Percentage of possible L1 influence as reported by the learners themselves

	Swedes			Finns			Diff Sw/Fi//	
	MC	CL	Diff	MC	CL	Diff	MC/CL	
Stage 1	40.3	33.8	6.5	38.8	33.7	5.1	1.5	0.1
Stage 2	47.8	34.8	13.0	26.9	26.0	0.9	20.9	8.8
Diff	-7.5	-1.0		11.9	7.7			

The results in table 2 support the trends evidenced in the figures 3 a-d, i.e. that the Swedish-speaking learners are slightly more inclined to use L1-transfer in stage 2 than in stage 1. Interestingly enough, table 2 also indicates a decreasing tendency for Finns to rely on Finnish-based solutions.

So far the effects of transfer have been dealt with with respect to prepositions. The results of this study should, however, not be generalized. What is true of prepositions need not necessarily be true of syntax, it need not even be true of all types of prepositions. Let us assume that one of the main findings of this study so far is that Swedes find the L1-transfer strategy very plausible (which is not true of the Finns) and that Swedes tend to use more L1-transfer in the later stage and Finns less. It has been demonstrated elsewhere (Sjöholm 1982: 100) that this is true only under certain circumstances. In a test consisting of language-specific items of various kinds (see appendix 1), it was found that the inclination to use L1-transfer was very low among Swedes and that there was a trend to avoid L1-transfer in the later learning stages, i.e. quite the opposite to the results on prepositions. This can be seen in figures 4 a-b which illustrates the effects on L1-transfer of marked, Swedish-

Fig. 4 a. Swedish-based:
Sw: gå in för
Eng: go in for

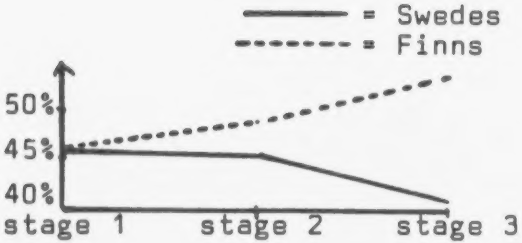
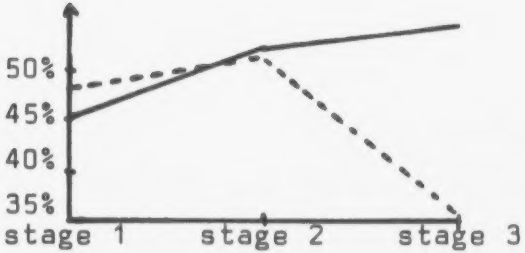


Fig. 4 b. Finnish-based:
Fi: ei päätä eikä häntää
Eng: neither head nor tail



and Finnish-based items which have a correct English equivalent. The same subjects as reported on earlier took part in the test in addition to subjects from a third learning stage, which were by far the most advanced. The subjects were asked to report whether they accepted or rejected as correct English an underlined expression in the test items. By the percentage in the diagrams below (as well as in figure 5 and 6 on the next pages) are meant the average percentage of accepted "expressions" in a given category.

The data for figure 4 a comprised 6 items of the kind exemplified above. The diagram suggests that Swedes tend to avoid L1-transfer in the third and most advanced learning stage. This result is interesting because according to traditional contrastive analysis Swedes should not face any learning problems here, but should on the contrary be helped by the identity of the L1 and L2 forms. In figure 4 b the data consisted of 4 items of the kind illustrated above. The diagram for the Finns showed even a stronger tendency than that of the Swedes to reject language-specific, L1-based expressions in the most advanced learning stage.

Another test was constructed in order to see whether the "markedness hypothesis" worked also when the resultant "English" expressions were incorrect. The same subjects as above were used.

The diagrams in figure 5 a and b were composed of 3 and 4 items respectively. These diagrams show that the trend to reject marked, L1-based items also seems to be true of incorrect English expressions, especially in the most advanced learning stage.

To be able to control what caused these results, the same populations took part in a test consisting of marked, correct, but non-L1-based expressions. In figure 6 a-b, the results of this test are given as well as the results of a test consisting of intuitively fairly unmarked, correct items that were both Finnish- and Swedish-based.

Figure 6 a indicates a completely different pattern than in the L1-based diagrams (figure 4 & 5). The Swedes seem to have had some initial advantages in completing these items, possibly due to some general effects of the language distance hypothesis. In the third learning stage, however, the difference is evened out. This can be taken as evidence that the reluctance both language groups showed to accept marked, L1-based expressions is largely caused by the markedness of the L1-expressions.

Fig. 5 a. Swedish-based:
Sw: pengar som gräs
Eng: ^{x}money as grass

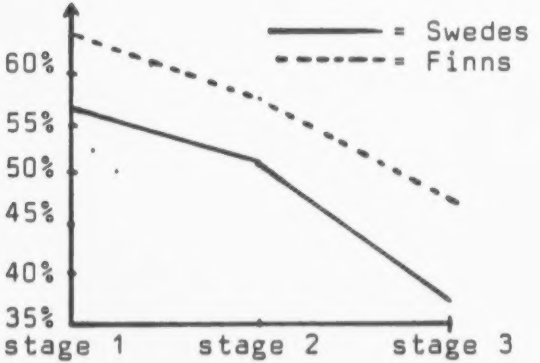


Fig. 5 b. Finnish-based:
Fi: puhua suunsa puhtaaksi
Eng: ^{x}speak one's mouth clean

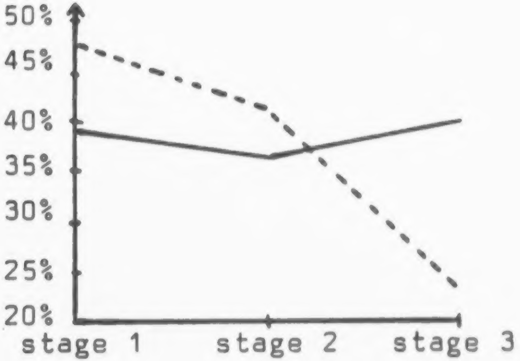


Fig. 6 a. Non-Swedish-, non-Finnish-based:
Eng: be soft on

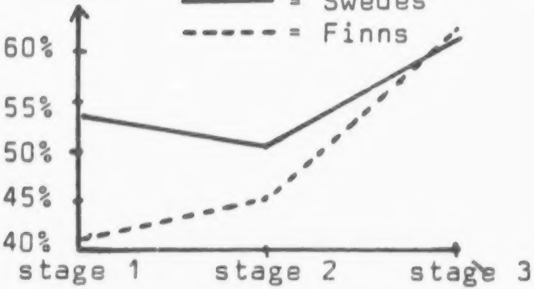
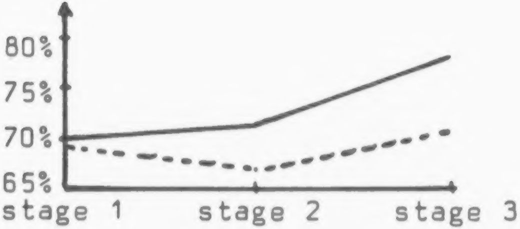


Fig. 6 b. Swedish- and Finnish-based:
Eng: go too far



To sum up, it may be stated that a comparison of the diagrams in figure 4, 5, and 6 leads to the following general observations.

1) language-neutral (unmarked) L2-expressions are more readily accepted than language-specific (marked) ones.
2) language-neutral (unmarked) L1-expressions are more readily transferred than language-specific (marked) ones.
3) an increased general knowledge of L2 seems to increase the learners' reluctance to transfer language specific (marked), L1-expressions.

Concluding discussion

This paper has been dealing with problems in operationalizing L2-learning strategies from the point of view of some data collected on L1-transfer. The first difficulty we meet is how to incorporate the concept of L2-learning strategy in a proper theoretical framework. How this question is solved depends exclusively on our conception of the character of L2-learning. The theoretical framework of interlanguage seemed in many respects to provide a proper reference frame for this study. The concept of learning strategy seems compatible with the notion of the uniqueness and dynamic character of interlanguage (IL) systems. The focus of learning has thus been more on the process as such, and not so much on a learning operationalized as conformity with the L2 norm. The latter position may easily lead to an overemphasis on the learning product and on errors as indications of failure to learn. Also correct renderings of utterances are of vital importance, because correct responses do not necessarily indicate L2-knowledge, as the data in this paper suggest.

IL systems have not so much been looked upon as a series of the learners' individual (idiosyncratic) grammars as identifiable strategies employed by the learners over time. The focus has therefore been on the regulating mechanisms in the learners' use of strategies. The issues under inspection have therefore, if possible, been treated from the learner's perspective. Learning has been looked upon as hypothesis testing and hypothesis formation very much in the cognitivist vein of psychology. The test data have been further restricted to cover a learning derived from hypothesis formation (i.e. psycholinguistic learning according to Faerch & Kasper 1980).

A very serious problem when operationalizing learning strategies is how to retain the distinction between strategies and automatized mental operations (processes). The trustworthiness of such distinctions may as a matter of fact be rather shaky because of the relative ability for learners to make introspective reports about internal states and operations (see Sharwood Smith 1977). It may of course be questioned whether such distinctions serve any purpose. How should, for instance, the great proportion of erroneous L1-based responses that had been judged correct (completely certain) by the learners themselves be interpreted (see fig. 1, p. 181)? Do these responses reflect learners who are not able to (or not willing to) perceive their own mental state of uncertainty or are these responses truly automatized or fossilized errors of L1-interference? In this paper the problem of the learners' varying ability to make introspective reports has been solved (or left unresolved) by following Faerch's & Kasper's definition of strategy as "a *potentially* (my underlining) conscious plan for solving what to the individual presents itself as a problem." (Faerch & Kasper 1980:60). The distinction between "potentially" conscious strategies and automatized mental operations has thus not been discarded. The concept of strategy appears to be very essential in language learning, because it comprises the active, creative aspect of the language learning process which may or may not lead to a change in the IL system (= learning). A mechanical and repetitious use of automatized mental operations (fixed rules) seems not to be in the same position of initiating changes in the IL system.

How did the learners' introspective reports work out in the data presented here? The purpose of the certainty scale was to give us a clue where the learners faced learning problems and thus help us to identify possible strategiegies. Figure 3 a-d (p. 184, 185) may serve as an example. The certainty scale here made it possible for us to detect that the Swedes used somewhat more L1-transfer in the second learning stage. The increase of transfer was clearly concentrated on the uncertain end of the scale. A count of merely L1-based errors and responses where the degree of certainty was not considered, resulted in almost no increase of "L1-transfer" at all.

One way of controlling the poor trustworthiness of the learners' introspective reports is to use alternative methods for the same populations and compare the results. This was done by asking the same subjects directly after their responses about possible sources of influence (but only when they felt uncertain about the correctness of the answer). In this case the results of the two methods pointed to the same direction, which of course make the results more reliable.

An area of difficulty when dealing with strategies is to what extent the types of data we are working with may reflect the results. Are the strategies used in the spoken medium quantitatively and qualitatively the same as those used in a written medium? Should we work with spontaneous, spoken material or authentic, written texts or is it advisable to use tests and elicitation techniques? All this may or may not have consequences for the results we arrive at. In this study different tests or elicitation techniques were used. It was therefore considered urgent to find out whether the use of different kinds of test techniques affected the results. A comparison between the multiple choice and open ended technique clearly indicated that the former technique led to greater use of the L1-transfer strategy among Swedes. Even though the general trends of the use of the L1-transfer strategy were very much the same for both test types, the multiple choice technique contributed to making these trends more prominent. This leads us to another problem, namely that of generalizability. Even though these results pointed to the same direction with open ended and multiple choice tests, how do we know that this is valid also in less artificial learning situations?

That the situation and the type of data we are working with are important for the choice of learning strategies was clearly demonstrated in the test with language-specific (marked) items. Whereas the results with language-neutral items indicated that L1-transfer is frequently used and increasingly so as learning progresses for Swedish learners, the transfer effects were quite the opposite with language-specific expressions.

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Appendix 1

TEST 1 NAMN ....

SKOLA ....

KLASS ....

Instruktioner: I var och en av testuppgifterna nedan finns en understreckad del (ett uttryck, en fras el.dyl). Dessa uttryck är ibland korrekt engelska och ibland är de felaktiga. Det är meningen att du skall avgöra om den understreckade delen är riktig engelska eller inte. Om du anser att det understreckade uttrycket är korrekt engelska, ange detta genom att sätta ett kryss (x) i RÄTT-kolumnen till höger om uppgiften. Om du däremot inte godkänner det understreckade uttrycket, sätt då ett kryss under FEL. Fyll därefter också i hur säker du är på ditt svar i SÄKERHETskolumnen längst till höger. Detta gör du genom att fylla i en siffra i enlighet med "säkerhetsskalan" som finns på blankett A. Ha blandett A bredvid dig då du fyller i testet. Exemplet nedan visar hur du skall fylla i testet.

EXEMPEL:	RÄTT	FEL	SÄKERHET
The man hoped me to come and see him.	....	x	3

Eleven som besvarat denna uppgift anser att uttrycket "hoped me to come" inte är korrekt engelska, men är i alla fall ganska osäker på sitt svar. Fyll i testet samvetsgrant, dock utan att fundera alltför länge på de olika uppgifterna. ALLA UPPGIFTER BÖR BESVARAS! Gissa om du inte kan!

LYCKA TILL!

	RÄTT	FEL	SÄKERHET
1. I think his lecture will wake an interest among a lot of students.	....	....	....
2. In addition to smoking twenty cigarettes a day he had the bad habit of drawing a cigar after dinner. in addition to-förutom	....	....	....
3. There is neither head nor tail in what he said. tail-svans	....	....	....
4. Bob Beamon broke the world record in long jump in Mexico City, 1968. long jump-längdhopp	....	....	....

	RÄTT	FEL	SÄKERHET
5. A millionaire gave John a job and then he married the millionaire's daughter so he killed two birds with one stone.	....	....	....
6. John is very rich. He has money as grass.	....	....	....
7. I thought him a Swede, but he turned out to be a Norwegian.	....	....	....
turn out to be-visa sig vara			
8. She had drunk her head so full that she wasn't able to rise from the chair.	....	....	....
9. I wonder which of the boys who has been here before.	....	....	....
10. The naked truth was that he wasn't so clever after all.	....	....	....
11. We didn't have the face to go home this evening because he hadn't done his wife's shopping.	....	....	....
12. Could you turn into Finnish what he said a while ago.	....	....	....
13. Idi Amin has been a nail in the eye to many European governments.	....	....	....
nail-nagel			
14. Here you are free to say exactly what you want. You should really speak your mouth clean.	....	....	....
15. Couldn't we sleep on this question and talk about it tomorrow.	....	....	....

The items above are just a sample of the original test consisting of 60 items altogether. The test comprised marked items of various kinds, some of which were correct, and other not (see appendix 2). The subjects were asked to report whether they found the items (the underlined expressions), which were presented in random order, correct English or not.

Appendix 2

BLANKETT A

Instruktioner: Läs igenom detta innan du börjar besvara testuppgifterna!

Uppgifterna du skall besvara är ibland svåra och du är kanske osäker på det rätta svaret. Bli inte för den skull nedstämd; det krävs nämligen mycket goda kunskaper i engelska för att klara alla uppgifter. Vid varje uppgift finns det en kolumn som betecknats SÄKERHET. Det kan ju hända att du är säker på ditt svar, men ibland kanske du är mycket osäker, ja det kan t.o.m. hända att ditt svar blir en ren gissning. I kolumnen SÄKERHET är det meningen du skall försöka ange hur säker/osäker du är på ditt svar genom att fylla i en siffra från följande skala:

SÄKERHET

1. Helt säker
2. Ganska Säker
3. Ganska osäker
4. Helt osäker (gissning)
5. Vet inte

I test 2 finns dessutom en annan kolumn betecknad ORSAK. Det är meningen du skall fylla i denna kolumn endast om du är osäker på ditt svar. Om du tycker att ingen av orsakerna 1-4 är lämplig eller om du inte känner till orsaken, välj då 5 (andra orsaker). Du har att välja mellan följande orsaker:

OM DU ÄR OSÄKER PÅ DITT SVAR, KAN DITT SVAR HA VERKATS AV:

1. något svenskt uttryck
2. något annat engelskt uttryck
3. något finskt uttryck
4. att jag försökte undvika uttryck som påminner om svenska
5. andra orsaker

HA DETTA PAPPER BREDVID DIG DÅ DU FYLLER I DE OLIKA TESTEN!

To find out the effects of markedness (language-specificity) on L2-learning a test was constructed according to the schema below

1) Source language = Swedish	Potential transfer	Target language = English
Correct Swedish expression. Expression 'marked' (language-specific) in Swedish. Example: gå in för	---------->	Correct 'literal' equivalent in English. Expression 'marked' in English. Example: go in for
2) Source language = Finnish		Target language = English
Correct Finnish expression. Expression 'marked' (language-specific) in Finnish. Example: ei päätä eikä häntää	---------->	Correct 'literal' equivalent in English. Expression 'marked' in English. Example: neither head nor tail
3) Source language = Swedish		Target language = English
Correct Swedish expression. 'Marked' (language-specific) in Swedish. Example: pengar som gräs	---------->	'Literal' equivalent in English = incorrect Example: ^{x}money as grass
4) Source language = Finnish		Target language = English
Correct Finnish expression. Expression 'marked' in Finnish Example: puhua suunsa puhtaaksi	---------->	'Literal' equivalent in English = incorrect Example: ^{x}speak one's mouth clean
5) No source language		Target language = English
No 'literal' equivalent in Finnish/Swedish		Expression 'marked' and correct in English. Example: be soft on (a girl)
6) Source language = Finnish/Swedish		Target language = English
Expression correct Finn/Swed. Expression fairly 'unmarked' (language-neutral). Example: Fi mennä liian pitkälle Sw gå (allt) för långt	---------->	Correct English equivalent. Expression fairly unmarked (language-neutral). Example: go too far

Appendix 3

TEST 2 A NAMN..

SKOLA...

KLASS ....

Instruktioner: I testet nedan passar ett av de fyra givna alternativen in i sammanhanget (d.v.s. i luckan). Ringa in det alternativ som bäst passar in i sammanhanget. Ringa in endast ett alternativ för varje uppgift!

Ange sedan för varje uppgift hur säker/osäker du är på ditt svar genom att fylla i en av siffrorna från "säkerhetsskalan" på blankett A. Dessa siffror fylls i kolumnen SÄKERHET till höger om varje uppgift. Om du är osäker på ditt svar, ange då dessutom orsaken till ditt val av svar. Orsaken anges genom att fylla i ORSAKs-kolumnen som finns längst till höger om varje uppgift med en av siffrorna 1-5. De numrerade orsakerna finns uppräknade på blankett A. Exemplet nedan visar hur du skall fylla i testet.

EXEMPEL: SÄKERHET ORSAK

The girl walked .... the road.
a. in c. on 3.......... 1..........
b. at d. onto

Som du ser har den elve som fyllt i denna testuppgift varit ganska osäker på sitt svar samt valt "on" eftersom det på svenska heter "på vägen".
Läs igenom blankett A noggrannt innan du börjar fylla i testet!

LYCKA TILL!

DEL I

SÄKERHET ORSAK

1. Mr Watson is a lawyer .... profession.
profession-yrke a. by c. from his ....
b. to his d. in

2. I could immediately notice that he behaved strangely,
but I could never imagine he had a murder .... his ....
conscience. a. in c. on
conscience = samvete b. to d. at
behave = bete sig

3. He was accused .... murder.
accuse = anklaga a. for c. with ....
b. to d. of

SÄKERHET ORSAK

4. I knew the soup would be .... his taste.
soup = soppa a. to c. in ....
taste = smak b. with d. of

5. It was typical .... him not to be there in time.
a. for c. with ....
b. to d. of

DEL II

Instruktioner: I testet nedan skall du fylla i luckan med det engelska ord som bäst passar in i sammanhanget. Fyll också här i säkerhets- och orsakskolumnen enligt blankett A.:

SÄKERHET ORSAK

11. Mr Watson is a lawyer .... profession.
profession = yrke ....

12. I could immediately notice that he behaved strangely,
but I could never imagine he had a murder .... his ....
conscience.
conscience = samvete behave = bete sig

13. He was accused .... murder.
accuse = anklaga ....

14. I knew the soup would be .... his taste.
soup = soppa taste = smak ....

15. It was typical .... him not to be there
in time. ....

The items above are just a sample of the original test, which existed in two versions including 20 items each. Half of the first version consisted of multiple choice items and the other half completion items. The second version comprised exactly the same items, but the completion items of the first version were converted into multiple choice and the completion items into multiple choice items.

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DECEPTION AND DISSOCIATION MARKERS AS INDICATORS OF COMMUNICATION STRATEGIES

1. Introduction

The aim of this paper is to present two categories of markers which indicate communication strategies for lexical difficulties or gaps. With the term strategy I refer to both achievement and avoidance strategies. As a hypothesis we might suggest that communication strategies follow universal principles, but differ in terms of percentage and proportions for each individual. Affecting factors are personality, age and level of proficiency (cf. Palmberg 1982:83), but situational context might also be of influence, as we will see below. The two categories – I have called them *deception markers* and *dissociating markers* – appear to be more frequent in the speech of language learners and foreign language speakers.

My material consisted of tape-recorded monologues on different topics, i.e. oral proficiency tests, either based on pictures or in the form of retold stories. The testees were first-term students from the Department of German at the University of Stockholm and 38 8-year old dominant bilingual children from the Deutsche Schule in Stockholm. The form of the test led to only acoustical elements being registered, and no facial behaviour or body language; nor were the testees able to use nonverbal speech or the appeal-for-assistance strategy to help themselves out of their difficulties. It also implied that I was able to concentrate on acoustical data.

The situation and the type of activity specifies the *possible goals* that the speaker will orientate himself towards, but does not predict which specific purpose/s/ will be involved or will dominate in each case. This, on the other hand, depends on the factors mentioned above (personality etc.). As regards our type of activity – a speaking test, for the adults in a foreign language, for the children in their second language – the main goals are

- to communicate/inform, to attend to the message
- to speak correctly, to attend to the form
- to talk fluently for a certain amount of time, to attend to the fluency
- to avoid showing/to disguise lexical gaps

It should be noted that all these goals, and especially the last one, contain elements of face-saving.

2. *The problem of identifying strategies*

A main problem when dealing with strategies is to find clues to identify them. Rolf Palmberg underlined that fact in his yesterday paper. One source of information, of course, is the *linguistic product*: the errors, the erratic, inadequate or vague expressions, and the unexpected paraphrases. The product can also consist of the different results of an avoidance strategy: noticeable simplifications, information gaps, unfinished sentences and abrupt shifts in topic. But as we know, a major difficulty of interpretation is to distinguish between products that result from achievement and avoidance strategies and those that have other explanations, such as the spontaneous slips of the tongue (or "slips of the brain", as Laver calls them 1970:73), fossilized errors, ordinary markers of informal speech, and individual selection between relevant and irrelevant information.

One solution is by the method of *introspection*, as Kaj Sjöholm pointed out in his paper yesterday, or of retrospective interviews (Tarone 1977).

In the following I shall present some *paralinguistic speech markers* that – as far as I know – have not been dealt with in the area of communication strategies. It is my opinion that they can offer another possible way of distinguishing between strategy and non-strategy.

The 6 examples below, taken from a picture test, may illustrate the problem. The target item to be communicated is 'ran away/escaped (from a Zoo or circus)'. In all the following examples /.../ means hesitation pause, colon lengthening of a vowel or syllable, and capital letters particular stress/force of articulation. Underscores refer to the target item in each case.

(1)	auf dem zweiten bild /.../ sehe ich einn tiger, der ist /.../ /ə/ ich glaube von einem tiergarten geflohen /.../ /ə/. alle leute ...	hesitation —> correct choice
(2)	die andere bild, es ist ganz intereSSANT, es ist eine tiger, die vom zoo aufgelaufen ist, und /.../ viele leute, sie, sie springen und /əː/ und /ə/ werden /.../ ja /.../ sie springen weg, wenn sie die, die tiger sehen.	no hesitation ———> error
(3)	da seh ich ein tiger, der ist von einem zirkus /.../ gekommen. die menschen haben angst.	hesitation—> simplification
(4)	der tiger rennt. er ist von eine zoologische garten ge/.../ ja. und ein mädchen ...	hesitation ———> message abandonment
(5)	und der tiger ist von einem zoologischen garten. er sieht böse aus /.../	no hesitation ———> selection (?)
(6)	ein /.../ tiger lauft auf eine tante, (in a low voice, blurred:) əm (as before:) erschreckt wird, und ös kind wird auch erschreckt und lauft auf den vater sein schultern auf.	hesitation ———> selection (?)

Only one example allows of the sure interpretation that the testee does not know the word and uses a strategy: (4) is a clear case of message abandonment, confirmed by the preceding hesitation pause and the following filler word *ja*. The other examples are more or less ambiguous. Testee (1) obviously hesitates, but manages to find a correct expression. (2) seems to have no word-finding difficulties with this particular item – but with a following one, *ängstlich*. Her spontaneous product, however, is incorrect. The hesitation of student (3) might indicate that the very vague *gekommen* results from a reduction strategy. It is interesting to compare this probable reduction with the products in the last two examples. Neither of the two testees, both children, communicates the item. (5) leaves out 'run away', (6) 'from the Zoo/

circus' as well. Are these two examples also to be interpreted as message reduction strategies, or are they correct German, resulting from genuine selection between relevant and irrelevant information?

3. Hesitation phenomena as strategy markers

As is well known, hesitation may indicate the use of a strategy, or more likely a *hierarchy of strategies*, whose first goal is to gain time in order to decide and carry out the second goal. The latter consists in avoiding the lexical gap through some avoidance strategy or in filling it, either by deblocking memory or through an achievement strategy, choosing a stand-in word or paraphrase.

Hesitation phenomena are individual phenomena. Besides pauses, consisting of silence, they include various fillers of pauses as vocalisations (or "vocal dawdling" as Mary Ritchie Key calls them 1975:50), throat-clearing, laughing, slurring, repetitions, expressions like *I mean* etc., used to delay. We can postulate then that the different hesitation phenomena might be *strategy markers*, if we define marker as an item whose presence correlates with a certain category. (As markers generally are subconscious, we could call these elements *symptoms*, as John Lyons does 1977:108. In accordance with Trudgill and Giles 1979 I prefer the term *marker*, also because this term implies that it is possible to bring them to some level of consciousness.)

4. Gap hiding

Before discussing other features in speech that indicate communication strategies for lexical difficulties, we have to consider one of the decision points that Nils Erik Enkvist told us about in yesterday's paper, the point where the criteria are weighted and the strategy is decided on. Let us concentrate on one of the four goals listed for our type of activity, the speaking test. I have chosen the last one, the speakers's attitude towards the lexical gap, and I am going to look at it from the aspect of its intentionality. That means: how strong and/or how conscious is the speaker's purpose to hide the lexical gap? For the classification I have found Jens Allwood's three categories of intentionality useful: *signal, exposition* and *indication* (1980).

The following 5 examples are taken from a retold story. The testees know the story before and they heard the target item *Tröddelladen* 'junk shop' once during the test.

(7)	er kaufte einen hauptmannsanzug in eine /.../ ach ich kann mich nicht das wort erinnern	no gap-hiding: metalinguistic signal of the gap
(8)	da kaufte er eine uniform in /.../ ein /.../ tja, geschäft wo man sehr alte sachen auf lager hatte	exposition of the gap (rather evident)
(9)	er kaufte eine alte uniform in /.../ /ə:/ einem geschäft	exposition of the gap (noticeable)
(10)	er kaufte einen militäranzug (lengthened:) i:n, in eine ladung mit alte kleiden und alte dingen	exposition of the gap (less noticeable)
(11)	er kaufte eine alte uniform in /.../ (louder, energetically:) und DA kaufte er eine alte uniform (more slowly, marked pronunciation:) und zog sie an	indication (message: I have no gap)

The first and last testee have chosen the strategy of message abandonment, but differ in their weighting of the face-saving criteria to conceal the lexical gap. (11) wants to hide the embarrassing fact from her listener, but (7) openly signals that she does not know the word. The three examples (8-10) are achievement strategies, (8) and (10) paraphrases and (9) a simplification. (For the classification of simplification as achievement strategy, see Stedje 1982:164.) These examples clearly show that "exposition" must be a category that permits degrees of more or less. The three students do not mind exposing their gaps, more or less obviously/intentionally, in contrast to (11), who evidently wants to deceive her listener. She deliberately manipulates her tone of voice, her speed and her stress in order to draw the attention from her lexical gap and conceal it. Her information to the listener is: The "message abandonement" you perhaps happened to hear does not exist.

5. *Deception markers*

Many features in language and paralanguage can be used in order to deceive. One of the first linguists to write about this fact was Harald Weinrich. In his book "Linguistik der Lüge" (1966) he describes the "Lügensignale" 'markers of lying', by which he means certain prosodic, semantic and extralingual elements that refer to the content of a text. I would like to postulate that you can lie not only concerning the semantic content but also with reference to the *form*, namely pretending that it is correct when it is not.

This way of lying is a strategy used in cases when the face-saving criterion "disguise lexical gaps" carries great weight and when a recently applied communication strategy has failed. I have chosen to call this phenomenon *deception strategy*. It is mostly used to disguise avoidance strategies, such as message abandonment, but in exceptional cases I have also found achievement strategies.

The examples below originate from the same picture test as (1-6). (13) is a student, the other three are children.

		Used prosodic components
(12)	Target item: haben	
	(rather monotonously:) ... einen tiger.	
	das rennt in wilder karriere durch die-	
	sen park, und die meisten leuten (very	
	indistinctly:) mm grossen (dis-	
	tinctly and expressively:) ANGst vor	stress/intensity
	diesen TIger, der in WILder karriEre	
	rennt. (as before:) nur ein mädchen ...	
(13)	Target item: klettern 'climb'	
	sie versuchen in die bäume zu /.../	
	(lengthened, accentuated:) A:ber ei:ne	length/intensity
	FRAU ...	
(14)	Target item: gestikuliert 'gesticulated'	
	da sind sie raufgesprungen und haben	
	bloss /.../ /ehm/ (higher, somewhat	high pitch

	Used prosodic components
affected:) die HO:sen sind zerrissen, die SCHUhe sind zerrissen (more rapidly:) die HOsen und hemd sind AUCH zerrissen (in a hushed tone:) auch zerrissen	rhythm/speed
(15) Target item: för livet 'for their lives' ... klättrar alla upp i parken allså, å två barn dom springer /uh/ /.../ (indistinctly:) å ok å livet allt /häm/ (lower, almost whispering, very intensely:) å den där TANten där i den där HATTen HON har en blommig väst	low pitch intensity

Testee (12), a boy, speaks in a rather monotonous key. He has difficulties with the target item; perhaps he feels insecure about the verbal ending (hat or haben?). In his L1 the subject would be singular, in L2 it is plural. His first strategy is blurring, in order to disguise the stand-in word he is using. That is not enough, however, and so he needs a second strategy: he begins to talk distinctly, with expression and with a certain loudness. These prosodic elements are meant to inform the listener that he is now going to tell something more interesting than what he has just said. Thus the listener may forget what he has just heard. In a similar way the student (13) uses length and intensification in order to disguise a message abandonment through the force of her articulation, hoping that the listener will not notice the failure.

(14) is an interesting example. The girl tries to conceal an obvious message abandonment, using high pitch which, as we know, may be heard in excited speech. She does not succeed, however, because she somewhat overdoes the variety in intonation. Perhaps she notices this exaggeration herself, since she makes an effort to conceal that new failure through speeding up. Then, in a hushed voice, she repeats the last two words of the sentence – probably a sign of a certain embarrassment.

The preceding example illustrates that deception strategies are often more obvious in children's speech. (15) is another example that shows this. The testee, a boy, blurs his stand-in version of the target item, and then uses low pitch as a deception strategy. He also speaks very intensely and is almost whispering, certainly aware of the fact that a whispering voice is generally used as a conventional signal of confidential or even conspiratorial interaction.

Thus the paralinguistic code of the language can be deliberately applied by a speaker, if he wants to draw the listener's attention from a certain item. The four preceding examples illustrate that almost all elements of expressive language can be used for the purpose of misleading the listener.

Deception markers can be rather difficult to detect. But once the listener has learnt to recognize them, he will be able to use them as clues for communication strategies, naturally together with the product, i.e. the preceding avoidance strategy.

6. *Dissociation markers*

More easy to identify, I think, is the second category of markers, which is also interlinked with a preceding, more or less failed strategy. The speaker is aware of his errors, his unsuccessful approximations to the target word or his message abandonments. In his weighting of criteria it is important to attend to the correct form. But generally the criterion "avoid showing lexical gaps" seems to carry less weight than in the cases where the speaker chooses a deception strategy: at the new decision point he doesn't primarily want to conceal his failure. Instead he dissociates himself from his own product, and that is why I have called these phenomena *dissociation markers.*

This category may be subdivided into those cases where the speaker shows his negative emotions towards the failure, and those where he pronounces his stand-in word in an ironic way. But sometimes there are no sharp limits between these two subcategories.

The markers of the *first subcategory* consist of various physiological acts like swallowing, sighing, laughter; of vocalisations and of intonational patterns, which all signal emotive expressions like anger, disgust, rejection, complaint, hopelessness and defaitism.

(16) Target item: wegjagen 'drive away'
sie versuchen die (lengthened, hesitating:) KU:H wegzubringen /hö hö/ embarrassed laughter

(17) die jungen wollen die kühe /. . ./ tja
/hn/ emotional sound

(18) Target item: entfernen 'take away'
versprachen eine grosse belohnung für
den, der die ratten bort, weg (sigh) sigh of despair
/. . ./ ein mann . . .

(19) Target item: sich amüsierte 'amused
themselves', lustig 'funny'
. . . eine geschichte über die das ganze
deutschland /. . ./ sehr /. . ./ sehr /. . ./
ja man glaubte dass die geschichte war sehr anger
/. . ./ froh (angrily:) ach! (as before:) es
handelt von . . .

The hesitation of student (16) before the target item, in her case an approximation, indicates her difficulties with the word, which is then confirmed through the embarrassed laughter after her unsuccessful attempt. Example (17), spoken by a student, contains the paralinguistic sound hn, made by blowing air out through the nose in combination with a nasal. It is quite frequent among Swedish speakers, and may represent an emotion, from amusement to embarrassment or irritation. Here it seems to express that nothing more can be done about the missing target item – or the noticeable lexical gap? He cannot withdraw the sentence and he has given up finding a stand-in word. In example (19) the student struggles with her target item; she tries to gain time through different hesitation phenomena: pauses, repetitions and new starts. Nevertheless she fails and shows her anger by exclaiming ach!

The following three examples belong to the *second subcategory*. Testee (21) is a child, the two others are students.

(20) Target item: geblümtes Kleid 'flowered dress'
sie ist in eine /. . ./ /hn/ blumigen anzug amused laughter
gekleidet

(21) Target item: wegjagen 'drive away'
die jungen /. . ./ (slightly lengthened,

somewhat accentuated:) SCHA:sen die kühe weg
ironic accentuation

(22) Target item: Kleid 'dress'
und eine dame hat blumen an dem /e: hm: e:/ (language switch and demonstrative Swedish pronouncing:) "klänning" (as before:) und viele photographieren ...
demonstrative language switching

The amused laugher in example (20) is strongly related to *irony markers* in ordinary speech: blinking, clearing the throat, unctuous accentuation etc., which announce that the speaker really means the opposite of what he actually says. The preceding short laughter of this student tells the listener that something funny will follow and that she is deliberately going to use an incorrect expression. Example (21): in a similar way, an ironic accentuation usually informs us that the verbal and nonverbal acts are incongruent, which implies that the intonation is manipulated. It is used in order to give a clear indication of a change of meaning in the particular word. Speaker and listener agree about that. In this example the irony refers to the form; both speaker and listener know and agree that the form is not correct. Perhaps, as in example (20), they may both share a certain amusement at the stand-in word. In my opinion this ironic accentuation is a kind of *audible quotation marks*, which are used alone or together with hesitation phenomena or with the above-mentioned other dissociation markers, such as physical acts and vocalisations. I would also like to classify the demonstrative language switching, as in example (21), as such audible quotation marks.

Dissociating markers seem to be typical of foreign-language speakers, especially in test situations, but also of anyone to whom – for one reason or another – it is important not to show erroneous language behaviour, and also of those who are insecure about their language.

6. Conclusion

In a language test situation, when attention is focused upon the words rather than upon the topic, "face-saving" as regards the lexical gap appears to be of great importance. In the examples above we have seen that the speaker comes to a new decision point, when a communication strategy has led to a noticeable failure. There are three principal ways to go:

- to proceed as before
- to admit the failure, more or less, but dissociate oneself from it
- to conceal the failure and thus deceive the listener

For the last two ways there are certain markers, the deception and the dissociation markers, which may help us to identify the two strategies. But in addition they can also help us to decide whether the speaker has used a communication strategy or not, since they are strongly interlinked with conscious errors and other products that the speaker considers as failed communication strategies for his lexical difficulties.

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EXPECTING THE DISCOURSE TOPIC IN NATIVE AND FOREIGN LANGUAGE TEXT COMPREHENSION

1. Introduction

1.1. The discourse topic

Van Dijk (1977, 1980) defines the discourse topic as a macroproposition. This proposition is arrived at linguistically by applying a set of recursive macrorules to the surface representation of the text. The rules delete, reorganise and reformulate information in such a way that the resulting statement expresses, on a more global and abstract level, the essential information from the original discourse. For example, consider the short passage in (1).

(1) (a) As is now commonly known, the world's reserves of oil are dwindling fast, and some people predict serious energy crises in the future. (b) In consequence, alternative sources of energy are being investigated everywhere. (c) Wood and coal are now used increasingly in both commercial and home heating. (d) The use of wind and solar energy in producing electricity is no longer a curiosity, and cars using alcohol instead of gasoline are already being developed.

Macropropositional reduction is achieved by such rules as WEAK DELETION, which omits the information contained in the first clause as irrelevant; STRONG DELETION, which omits the idea of predicted energy crises as information that, although locally relevant, is by automatic inference relatable to the contents of the second clause of sentence (a); ZERO, which preserves the content of the second clause of (a) intact; and GENERALISATION, which creates a general statement about increasing interest in other sources of energy from the topical sentence (b) and the following sentences which elaborate on it. The result of the application of these rules is two basic macropropositions, expressed informally as

(2) a. The world's reserves of oil are dwindling fast.
b. Alternative sources of energy are being taken up.

A CONSTRUCT rule may operate on the two macropropositions derived in the first cycle, resulting in a single, more general statement such as

(3) Alternative sources of energy are starting to replace oil.

Statement (3) is one possible way of expressing the global meaning of the discourse, and thus provides a usable summary. Its contents would also typically be represented in a title to the passage (e.g. 'Alternatives to oil'). It is such global propositions that represent discourse TOPICS in van Dijk's analysis. He thus equates the notion of discourse topic with a statement of gist.

In this paper a narrower definition of discourse topic will be used. The topical macroproposition in van Dijk's sense is "about" a notion, and gives a piece of new information about this notion. Thus it divides into a global theme and rheme. In the following, the discourse topic is understood as the notion to which the theme of the topical macroproposition refers (the referent of *alternative sources of energy* in the passage above). This definition is inadequate in practice to describe the topic in complex texts. For example, passage (1) above is not merely about alternative sources of energy, but instead about the fact that alternative sources of energy are replacing oil. However, the simpler definition will be adequate for some cases, e.g. descriptive texts where the properties of an object or person are enumerated. The materials of the present study are typically of the kind where the dominant text strategy is based on the iteration of a single theme (cf. Enkvist 1973, 1975) and the presentation of various bits of new information about the topical referent.

To summarise, we will say here that, for the materials to be used in the following, the macropropositional theme is taken as the discourse topic. It represents the point of departure for the discourse, and provides the answer to the reader's question of immediate concern (Keenan and Schieffelin 1975): "What (notion) is the writer giving me information about?".

1.2. Signals for the discourse topic

Various signalling devices are available to the writer for indicating how the information is "staged" (Grimes 1975, Clements 1979) in the discourse, i.e., which element of the content has been "thematised" (cf. Perfetti and Goldman 1974, 1975) as the referential core for the text. If the topical signals are properly formulated, and are interpreted correctly by the reader, the thematised notion becomes "foregrounded", i.e. placed in sharp focus in the mind of the reader (cf. Chafe 1972; Sanford & Garrod 1981).

The selection of a particular element of meaning as the central point of departure is necessary for the discourse to appear coherent. An extreme form of theme progression (Enkvist 1973) where the rheme of a sentence is turned into the theme of the following sentence, about which a piece of new information is again provided, yields text where linguistic cohesion may be faultless but where a coherent discourse topic never emerges. A more considerate text strategy is one which allows the selected topic to prevail for a certain stretch of text through theme iteration. One consequence of this is that expressions pointing to the discourse-topical referent will appear as themes in several of the sentences of the discourse, so that sentence themes function as cues to the topic of the discourse. The chief linguistic mechanism of maintaining topical coherence and signalling topical continuity is thus reference, e.g. explicit repetition of the topic or the use of other coreferential expressions. The cues may also be more indirect, as when reference relations are expressed through hyponyms and hyperonyms, or merely implied on the basis of shared experience. The perceived topic invokes a schema which is used by the reader to make the necessary inferences.

In many cases, a direct cue to the discourse topic is the topical sentence, the central sentence of a paragraph. Normally it appears paragraph-initially, sometimes after an introductory sentence (as in the case of (b) in passage (1) above), or paragraph-finally. Since it is the base to which further items of information in other sentences are tied by reference, it tends to be an autosemantic, often generic statement, and usually contains concepts that are hyperonymic in relation to the key concepts in the sentences that are below it in the macrostructural hierarchy.

The statement containing the discourse topic may also be identified through rhetorical, illocutionary signals of sentence function. Sentence (b) in (1) above is an example of a topically central general statement that can be identified as such through the presence of clauses or sentences that specify its contents by examples or explanations. The sentence themes of the specifying statements naturally tend to be hyponymic in relation to the theme of the topical sentence.

The cues to discourse topics also include non-topical organising material (Lautamatti 1980) used to structure the text and to signal the writer's perspective. Perhaps the clearest example is straightforward metatext which points out the element of content selected as the topic ('I will next deal with the search for alternative sources of energy'). Related to such structuring statements are Meyr's (1975) 'explicit rhetorical predicates', i.e. expressions which indicate schematic rhetorical divisions of text into functional chunks such as setting, problem, solution, etc. ('A burning problem in today's world is finding alternatives to oil.'), which have obvious topical significance.

Discourse-topical information may also be signalled by the presence of text-internal interim summaries, which perform a similar macropropositional function as topical sentences, but with larger stretches of discourse. The title, already mentioned, and typographical conventions such as paragraph separation also serve as cues to the topic and the extent of its span.

1.3. Processing implications

The understanding of continuous discourse involves an interaction between data driven and conceptually driven processing. The input is subjected to data-dependent recodings through which a meaning representation is generated from the bottom up. Simultaneously, the string of language, on which the analysis has just begun, makes contact with the knowledge structures in the reader's mind. This knowledge is utilised by processes which generate top-down expectations concerning microlevel (word, phrase, clause, sentence) structure as well as more global features (central content, schematic structure of the discourse, properties of objects and events in the real world, etc.).

The predictive hypotheses supplement the data-driven analysis, and involve a precoding of information, i.e., doing part of the processing in advance to facilitate the on-line handling of the input string. Data-driven processing is necessary for the generation and checking of the knowledge-based predictions: top-down processing must naturally be based on the data at hand. Conceptually driven processing is similarly likely to be present even in the earliest phases of comprehension after the purely perceptual operations. Its function is to direct the data-driven analysis while simultaneously being constrained by the bottom-up processes. Thus, what is sometimes seen as a strict dichotomy between the two modes is in reality a two-way interaction. The notion of interactive processing is inherent in comprehension models that rely on the notion of expectation but not necessarily in serial models.

The question of interest is what the interaction of these processing modes is like; for example, in what way the characteristics of the comprehender, input material, or situation determine the extent to which reading comprehension is facilitated by expectations concerning such global features as the discourse topic.

The processing implications of the discourse topic centre around the concept of the limited-capacity working memory. In well-formed text with sufficient topical continuity, the function of the discourse topic is to make efficient integration of new information possible by enabling the generation of coherence-based expectations. The topic guides and limits the memory search whereby an attempt is made to map the given information in the current sentence to antecedent information already stored (cf. Clark & Haviland 1977; Lesgold et al. 1979). If the theme of the current sentence corresponds to the foregrounded discourse-topical referent, the search is facilitated, and the new information in the sentence can be rapidly integrated. If the current sentence is about a notion no longer foregrounded, reinstatement of the backgrounded concept from long-term memory is necessary, which complicates processing, as does the situation where bridging inferences are required. If the memory search for antecedent information yields no results, the new information given in the sentence cannot be immediately integrated, in which case the theme of the current sentence is tentatively adopted as a new, additional discourse topic on a dynamically changing stack of topical hypotheses maintained by the comprehender.

In summary, the discourse topic is a macrostructural feature whose identification is likely to be a factor in the fluency of comprehension. Processing load may be reduced if the reader begins handling the current sentence in terms of the global topic. The way texts are structured on this variable, and the sensitivity of the reader to discourse-topical signals, should thus have clear processing consequences.

2. First and foreign language research on discourse topic processing

The recent interest in discourse phenomena in L1 comprehension is apparent in the large literature on the processing of the discourse topic and related textual constructs. In a sense, this literature follows the traditional line of psycholinguistic investigation: attempts are made to demonstrate the psychological reality of linguistic constructs by studying their processing consequences. As is well known, this line of investigation had its problems for syntax, and led to doubts about the value of linguistic categories and processes for the study of the processes of language use. On the other hand, it also led to scepticism about the value of processing evidence for argumentation in linguistics.

The search for the psycholinguistic reality of text structure, however, is well motivated. Texts are concrete units. The form they take is determined by performance factors such as ease of production and understanding, optimal structuring from the point of view of recall or desired effect, and so on. A text is a unit of language which takes a certain form because it is intended to lead to certain types of processing consequences. Thus, the connection of structure and process is more immediate for texts than it is for the system-sentences of language.

Typical parameters whose effects have been investigated include propositionally defined content structure, the organisation of texts into functional (rhetorical) units, and the effects of staging (e.g. Meyer 1975; Frederiksen 1977; Kintsch and van Dijk 1980; Thorndyke 1977). Some studies related to the staging variable and topic foregrounding are briefly mentioned in the following.

Anaphora studies such as Lesgold et al. (1979) and Purkiss (1980, reported in Sanford & Garrod 1981) demonstrate that the ease of referential mapping of the given information in the current sentence to antecedent information in the discourse depends crucially on what is currently foregrounded as topical information. The limited-capacity working memory cannot hold available as possible antecedents everything that was mentioned at some time in the discourse. Things to be held available are selected, and one basis for selection is the reader's hypothesis about topicality. If the discourse-topical status of a referent becomes uncertain (as a result of intervening topic-changing sentences), it becomes difficult to locate that referent as the antecedent for expressions in the current sentence, even though the referent occupies a thematically prominent position as the subject of the antecedent sentence. The result is increased reading time for the current sentence. If the antecedent is an object and rheme in the antecedent sentence, the intervening sentences tend to have an even larger effect on the reading times of the target, suggesting that the rheme of the antecedent sentence is less resistant than its theme to the availability-diminishing effect of the intervening sentences. The reason is presumably that the theme assumes discourse-topical status during the processing of the antecedent sentence, and remains, to a certain extent, on stage, in spite of the intervening material. The probable explanation for the increased processing load in the case of a long referential span is reinstatement matching (cf. Lesgold et al. 1979), which is obviously more costly than immediate matching of the given information with antecedent information.

Kieras (1978) found that topical coherence and the use of a top-down convention of placing high-level information first in a paragraph effectively directs subjects' choice of what is understood as the discourse topic (as measured by a title formulation task). Recall scores were higher for top-down (deductive) paragraphs than for bottom-up (inductive) paragraphs, but sentence reading times did not differ in the two conditions if subjects read the passage for a recall test. Good paragraph structure produced a facilitatory effect in reading times when a relatively artificial method of increasing cognitive load was used (asking subjects to read material where sentences from several passages were interleaved). Kieras (1981a) suggests that the number of items on the topic stack is a measure of passage coherence, and a factor in reading time. Adding a new candidate item to the stack increases processing load, since there will be more items competing for the limited capacity of the system. Another observation by the same author (1981b) is that title formulation is facilitated and overall passage reading times are shortened if the passage is staged around a single referent functioning as a clearly identifiable discourse topic.

The interplay of the discourse topic with sentence syntax and thematics is further demonstrated by Perfetti and Goldman (1974; cf. also 1975), who investigated the efficiency of a thematised referent (discourse topic) as a memory probe. When the referent of the subject of a paragraph-final SVO sentence had been the topic, the subject functioned better as a probe than did the object word. When the object had been the topic, the subject and object were equal as probes. Thus, when the theme of the target sentence continued the discourse topic, the combined effect of discourse-topical and sentential foregrounding kept the subject word strongly salient. The equality of the subject and object words as probes in the condition where the target sentence object (rheme) had been foregrounded in the preceding context indicates that the object had now acquired a degree of salience by virtue of its discourse-topical status while sentence thematics maintained the salience of the subject's referent.

The importance of topic knowledge for interpreting and recalling vague, ambiguous or richly metaphorical text is clear from studies like Dooling & Lachman (1971), and the effects of topic knowledge are here related to the expectation-oriented notions of frame, schema, script and scenario (see e.g. Tannen 1979; Sanford & Garrod 1981). Once established, the topic helps to activate a stereotypical body of knowledge, which makes predictable aspects of content available even before the input signal has been fully analysed.

Less research has been carried out on the effects of topics and related discourse variables on foreign-language processing, which probably reflects a basically sentence-based approach to non-native performance as well as an orientation that Enkvist (1980) terms structural as opposed to processual. However, introspective self-monitoring data (Cohen & Hosenfeld 1981; Hosenfeld 1977) seem to indicate that successful FL performers are consciously aware of employing global reading strategies such as attempting to hold central passage content in mind while reading, whereas microlevel operations emerge as central in the intro(retro)spections of less successful language learners. Instruction may sway reading strategies toward the global type (cf. Hosenfeld 1977); pedagogical suggestions are given by Godfrey (1977) and Clarke & Silberstein (1977). Chihara et al. (1977) is a demonstration that foreign language proficiency interacts with a coherence variable of a relatively crude type: it appears to make more difference to advanced learners than to less advanced learners whether the discourse is well-formed or consists of scrambled sentences. Using both oral reading miscue analysis and various silent reading tasks, Cziko (1977; 1980) has demonstrated that there are proficiency-dependent differences in the extent to which non-native readers employ discoursal cues, and according to Jacobs (1981), awareness of rhetorical signals of connection and illocutionary function is an important determinant of foreign-language proficiency.

3. The present study

The research described above indicates that the discourse topic is a significant factor in global comprehension. The topic also appears to guide the more local processes at sentence level and below. Methodologically, the bulk of L1 processing research on the topic and other discourse variables has utilised successive techniques in various recall paradigms, but simultaneous measures of on-line performance, especially total sentence reading times, have also been employed to some extent. Clements (1979), however, calls for more research concerning the on-line effects of staging variables, and suggests the use of eye-movement methodology and probes to interrupt reading at selected points to study on-line performance. Britton et al. (e.g. 1978) employ a subsidiary task of monitoring for a nonverbal signal during the reading of long texts to estimate processing load (cf. also Britton et al. 1979, who failed to demonstrate the on-line effects of Meyer's paragraph height with this method).

While there is some interest in discourse factors among foreign-language teachers and test constructors, few studies seem to have investigated their effects from a psycholinguistic angle by studying the on-line comprehension performance of foreign language users. The present study attempts to do that by examining the on-line processing consequences of discourse topic identification and foregrounding in native English readers and two groups of non-native (Finnish) users of English.

The general question is to what extent the reader develops expectations about the discourse topic, and whether these predictions guide and facilitate the processing of information contained in the individual sentences. The study also poses the question whether language proficiency has any effect on the identification and utilisation of discourse-topical information during reading. The focus of interest will be the final sentence in short paragraphs, and the compatibility of the theme of this sentence with the discourse topic foregrounded in the preceding context. In one condition, the theme of the paragraph-final sentence represents a continuation of the foregrounded discourse topic. In another condition it is a concept which was mentioned in the initial sentence of the text, but which has subsequently been backgrounded. An on-line measure of processing load is taken at a point immediately following the theme of the final sentence, in order to see whether the processing of the theme is affected by discourse-topical expectations that have arisen while the preceding context was being read. The measure used involves reaction times in a subsidiary task, visual word monitoring, which makes it possible to focus attention on the crucial thematic point as it comes up for processing.

What was said above about the linguistic signalling of discourse topics and their processing implications suggests that, for fluent L1 readers, the marking of a referent as topic, and the topical continuity of text, should facilitate not only recall but also on-line text processing. For these readers, comprehension probably begins with an attempt to construct an immediate macrostructural hypothesis about what the text is dealing with. The reader may then approach each new sentence with the hypothesised discourse topic in mind, trying to establish the relation of the current sentence to the topic (cf. Clark and Haviland 1977). Unless the end of the topical span is indicated by concluding signals, the starting point for the interpretation of a new sentence is the expectation that its theme will continue to be compatible with the established general topic. The strength of the signalling of this compatibility may of course vary. A particularly strong form of signalling is the repetition of the discourse topic in the themes of the individual sentences, and for this reason such iteration cannot continue long without the text becoming stylistically unacceptable.

The assumption made here for fluent L1 readers is that processing load is relatively low at a point where the theme of the final sentence is being processed if the theme explicitly continues the foregrounded discourse topic. If, however, the theme of the final sentence reintroduces a referent which has not been foregrounded in the immediately preceding context, though it has been mentioned in the initial sentence, a reinstatement of this referent from long term memory is necessary. At a point immediately following the sentence theme, an increase in processing load, due to this reinstatement, should therefore be observed for the fluent reader.

However, the micro- and macrolevel processes of text understanding compete for the limited capacity available at a given moment. In view of this fact one may expect that the proportional share of capacity demanded by these processes can vary, for example as a function of the type of incoming material or reader characteristics such as cognitive style, previous training, or skill expertise. Lesgold and Perfetti (1978) suggest along these lines that poor general comprehension in native English text processing can in part be explained by slow letter and word scanning skills, or inefficient phonological coding. The implication is that poor comprehenders allocate much of their processing capacity to these lower-level operations. They are unable to pass smoothly over the local features of the message and to direct their spare capacity to such processes as topic or gist identification and the integration of information into a global model of discourse content.

To extrapolate from this to the foreign language situation, one may hypothesise that proficiency variations have an effect on where processing capacity goes in non-native reading. More specifically, it may be assumed that capacity allocation to the various levels of the message depends heavily on the automation of the microlevel processes (e.g. lexical access, parsing). The reason is that a certain amount of microlevel analysis is logically necessary for the construction and checking of top-down predictions before these can in turn facilitate microlevel processing. If the foreign language reader's local processes such as sentence comprehension function with a minimum of conscious control, capacity can be directed to the utilisation of macrolevel cues. If attention has to be centred on local processes, less capacity will be available for discourse operations such as constructing a gist representation from the sentences of the text, and predicting the thematics of incoming sentences from a hypothesis concerning the discourse topic.

If advanced non-native readers follow a similar strategy of topic expectation as native speakers, a facilitating effect of previous context should be observed in the condition where the theme of the paragraph-final sentence is compatible with the foregrounded discourse topic. In a condition of topical incompatibility, an inhibiting effect should be observed in much the same way as with native speakers. The fact that processing takes place in a foreign language may, however, introduce an overall increase in processing load even in subjects who are highly fluent. As a result, advanced non-native subjects should be slower than native speakers on a reaction time measure in the subsidiary task.

If less advanced non-native readers allocate a considerable portion of processing capacity to microlevel features of the language (morphological processes, basic syntactic relations) rather than global features, this should be reflected as a relatively small difference in processing ease for the paragraph-final sentence in the two conditions of topical compatibility and incompatibility. The assumption is thus that less advanced non-native readers may not always reach the depth of analysis required by adequate comprehension of macrostructure. Global discourse-level features may pass unnoticed, and even if they are perceived at some level, less advanced non-native readers may not use them to direct lower-level processing as efficiently as advanced non-native readers do. Again, if the measure of processing load is sensitive to foreign-language proficiency variations, the overall response times of less advanced foreign-language subjects in the subsidiary task should be slower than those of advanced non-native readers.

One would thus expect a global topic variable to interact with proficiency level in foreign language text comprehension. Advanced non-native readers should be sensitive to staging signals, and they should be able to recognise and keep in mind the discourse topic better than less advanced non-native readers. They should be able to construct topical expectations fairly efficiently during reading, and so their on-line comprehension performance should be affected by manipulations of topic structure to a greater degree than the performance of less advanced non-natives.

3.2. Subjects

A group of thirty 2nd and 3rd-year students of English from the Department of English, University of Turku acted as an "Advanced" (ADV) group.

These students were studying English as their main university subject. They had been selected on the basis of a stringent proficiency test, and had been receiving intensive language skills training during their two first years at university. A group of 28 students from the Faculty of Social Sciences of the same University acted as an "Intermediate" (INT) group. The latter group were enrolled in a course for students who had not yet reached a passing mark in an ESP reading comprehension test required by their Faculty. In addition, a group of 9 native speakers of English participated as a control group (NS).

3.3. Materials

Six pairs of experimental passages and eight filler passages were constructed. Each passage had the following structure:

TITLE

$$\left.\begin{array}{l}\text{CONTEXT SENTENCE 1}\\ \text{CONTEXT SENTENCE 2}\\ \text{CONTEXT SENTENCE 3}\end{array}\right\}\quad \text{approximately 75 words}$$

TARGET SENTENCE 17 words (ASVX)

Each pair of test passages was produced from a single original by staging the title and context section around two different referents. The function of the title was to give a particularly strong clue about the discourse topic. After the title, the first context sentence introduced two referents. The one in the rheme corresponded to the referent mentioned by the title. This structure of the initial sentence was used in order to achieve the effect of a reasonably natural introductory sentence. After a theme progression (Enkvist 1973), this referent appeared as the theme of the second and third context sentences, and was thus consolidated as the discourse topic, and foregrounded. The resulting two passages (A and B) now "were about" two different things, both of which, however, had been mentioned in the initial sentence.

The Condition A and Condition B contexts were both followed by an identical closing sentence, the target sentence. It began with an adverbial, which was followed by a subject NP, a verb, and a final constituent (object or complement). The subject NP (and theme) of this sentence either represented the continuation of the passage topic (Condition A), or reintroduced, by exact repetition or the use of a coreferential NP, the non-topical referent from the first context sentence (condition B). Table 1 gives a sample of the materials.

3.4. Procedure

On-line processing during the target sentence was studied using a visual word-monitoring task. The subject was seated in front of a display terminal connected to a DEC20 computer and a microprocessor-controlled reaction time analyser (RTA). The presentation of the items was controlled by two programs, one in the terminal and the other in the DEC20, operating in synchrony and capable of presenting the items to subjects in real time. Reaction times were measured to an accuracy of 1 msec by the measurement and storage program of the RTA. The instrumentation and programs are described in Tommola et al. (1982; forthcoming), and Salmela and Tommola (1982).

The session began with 10-15 practice trials identical in form to the test items proper, after which the test items were presented. In each item, the title and the three context sentences were displayed for a constant reading time sufficient for the intermediate subjects. Instructions emphasised absorbing the main points of information from the text. At the end of the reading time, the screen was cleared, and the target sentence was presented, preceded by a 1-second display of the target word. The target sentence was typed onto the screen by the program at the rate of 10 characters per second, starting from a fixation point indicated on the screen. The entire sentence remained visible for 1 sec after the final letter had appeared. The task of the subject was to depress a microswitch upon seeing the pre-determined word, while simultaneously reading the target sentence for meaning.

The comprehension of the target sentences was controlled by asking the subjects to produce orally either paraphrase or a free translation of the content. In addition, one comprehension question was presented on the context sentences. The purpose was to force the subjects to process the context at a deep enough level for possible topic effects to emerge, and similarly to ensure that they would read the target sentence for meaning.

Two sets of experimental materials were constructed. In each, half of the passages of interest appeared in condition A form, half appeared in condition B form. Each subject thus received 3 Version A passages and 3 Version B passages, together with 8 filler passages. Presentation order was separately randomised for both sets of material. Subjects were randomly assigned to either test material set.

The minimum and maximum limits for word monitor latencies to be included in analyses were pre-set at 100 msec and 1500 msec. Reaction times exceeding 1.5 seconds are generally thought to represent other than immediate comprehension processes in monitoring experiments.

Table 1. Sample of experimental materials

VERSION A	VERSION B
TITLE: Captain Archie Fry	TITLE: The U.S. Coast Guard
CONTEXT SENTENCES: Back in the 1930's the U.S. Coast Guard spent a lot of time trying to catch Captain Archie Fry, the chief organiser of illegal alcohol trade on the East Coast.	CONTEXT SENTENCES: Back in the 1930's Captain Archie Fry and other organisers of illegal alcohol trade gave a lot of work to the U.S. Coast Guard on the East Coast.
Captain Fry, who was thoroughly familiar with the coastal waters, usually anchored his ship in a safe place in the dark of the night, and was then met by buyers who sailed out in small boats to purchase liquor.	The Coast Guard men, who were thoroughly familiar with the coastal waters, patrolled the likeliest trade routes in the dark of the night, searching for buyers who sailed out in small boats to purchase liquor.

The captain sailed only about two trips per year, but every time he sould thousands of gallons of illegal whiskey to underworld customers.	The Guard boats were on duty every single day of the year, and often confiscated thousands of gallons of illegal whiskey meant for underworld customers.
TARGET SENTENCE: For a number of years Fry *managed to avoid the probing searchlights of government ships.	TARGET SENTENCE: For a number of years Fry *managed to avoid the probing searchlights of government ships.

In the target sentences, though not in the filler sentences, the word to be monitored for was always the 7th word in the sentence. In the table, the target word is preceded by an asterisk. Syntactically, it was a past-tense verb appearing after the subject NP (and theme) of the target sentence. The target verb was a relatively high-frequency item familiar to the foreign-language subjects. Furthermore, the verbs were judged to be general enough in meaning not to give the subject much indication of what the actual content of the target sentence would be. The target word was capable of occurring as the verb for the thematised referents of both Version A and Version B with roughly equal probability. The beginning of each target sentence was neutral with respect to both Version A and Version B contexts up to the subject NP head noun.

3.5. Results

The subjects' oral paraphrases were evaluated by the experimenter for correct mention of the actor, action and goal of the target sentence. Three per cent of both native speaker and advanced non-native paraphrases were incomplete. In the intermediate group the percentage was 17. When a subject produced an incomplete paraphrase, the experimenter asked firstly what the target word had been and then asked the subject to talk about the whole text. In this free recall situation, the majority of subjects who had failed to produce a complete paraphrase were able to retrieve the central semantic roles of the target sentence. It was concluded from this that incomplete paraphrases tended to result not so much from comprehension problems as from encoding difficulties associated with keeping the entire target sentence in mind while attempting to formulate it in different words or in the native language. The monitor latencies for these cases were included in the data for all groups.

All of the reaction times of the native speaker subjects fell within the pre-set limits of 100-1500 msec. The percentage of RTs discarded as overlong was 2% in both the advanced and the intermediate non-native group.

Occasionally subjects failed altogether to react to the target word. This happened more often with native English readers than non-natives. The most common reason given by subjects was involvement in the meaning of the passage and the consequent failure to pay attention to the target word.

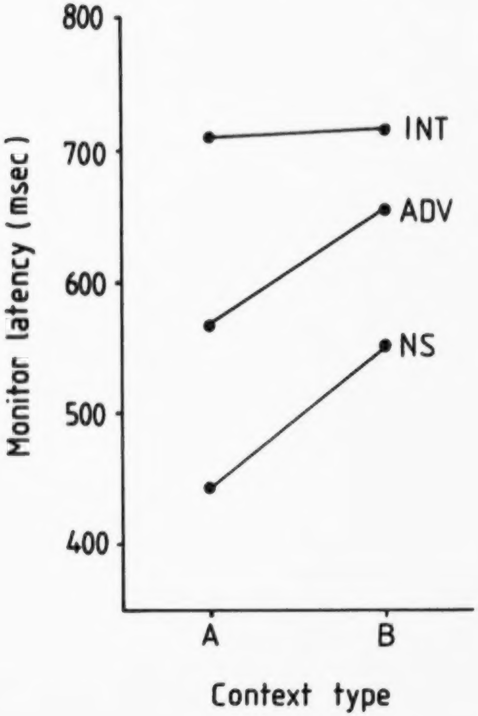
The total percentages of missing reaction times (overlong RTs and failures to react) in the three groups were 9% (intermediate), 5% (advanced), and 9% (native speakers).

Monitor latencies. The A and B monitor latencies were averaged for each subject, and an analysis of variance was performed on logarithmic transformations of the means, with context type (A, B) as a within-subjects factor, and proficiency (INT, ADV, NS) as a between-subjects factor. The pattern of the monitor latencies is given in Figure 1.

Figure 1 indicates, firstly, that there are distinct differences between the three proficiency-level groups in their overall word-monitor latencies. Advanced non-natives are, on the whole, approximately 100 msec faster than the intermediate group, and the native speaker group is approximately 130 msec faster than the advanced non-native group. The main effect of proficiency is significant, $F(2,67) = 21.26, p < 0.001$.

A significant main effect also emerged for the topic factor, $F(1,67) = 18.91, p < 0.001$. The results support the hypothesis that, on the whole, continued foregrounding of the discourse-topical referent facilitates ongoing processing at the point selected for observation here. When the non-foregrounded referent appears as the target sentence theme (condition B), word monitor latencies to an item immediately following the subject (theme) NP tend to be higher.

Fig. 1. Mean word monitor latencies for target sentence verbs in two context types and three groups of subjects. A = discourse topic as target sentence theme. B = a non-foregrounded referent as target sentence theme. INT = intermediate non-native, ADV = advanced non-native, NS = native speakers.)



The average word-monitor reaction time for native speakers in condition A was 115 msec shorter than the latency in condition B. The A-B difference in the advanced non-native group was 80 msec in the same direction. In the intermediate non-native group, the mean for condition A was 10 msec shorter than the condition B mean. The interaction between proficiency level and topic is significant, F(2,67) = 3.86, p = 0.03. Thus, while the native speaker and advanced non-native groups are responding almost identically to the manipulation of the topic variable, the intermediate group displays a different pattern by not being similarly affected.

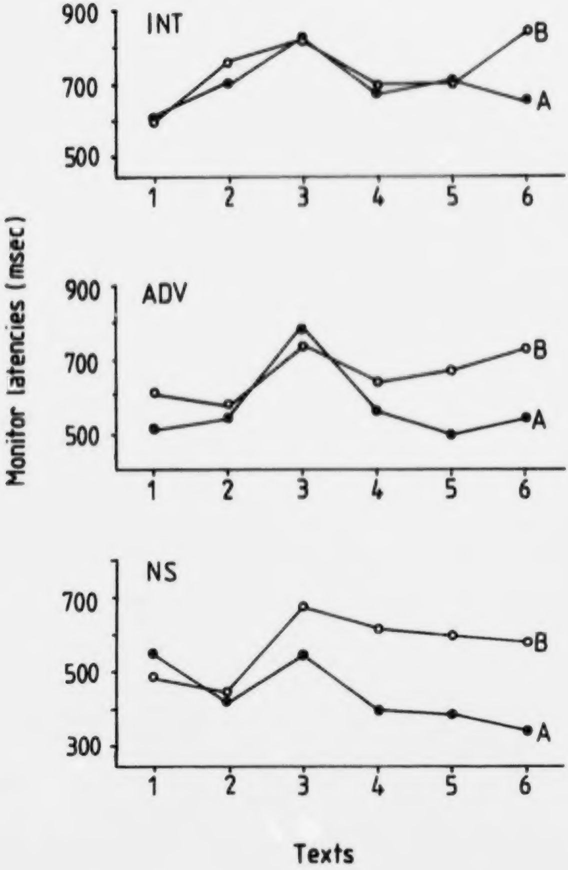
The mean A latency was shorter than the mean B latency for all native speaker subjects. In the advanced non-native group, 3 out of the 30 subjects had a mean A latency that was over 10 msec longer than the mean B reaction time. Fifteen out of the 28 subjects in the intermediate non-native group displayed the latter pattern. Thus, the native speaker and advanced groups appear to be homogeneous with respect to the effects of the topic variable, whereas the performance of the intermediate group is more unstable.

Texts. Some informal observations may be made on the texts. Figure 2 shows the mean word monitor latencies for each of the six pairs of experimental passages in the three subject groups.

As will be recalled, the target sentence was identical for the A and B versions in each of the six text pairs. Thus the monitor latencies for condition A and condition B were obtained, for each text pair, from the same word. In the native speaker group, four out of the six text pairs displayed clearly shorter monitor latencies for the A version as compared with the B version. A small difference in the expected direction was obtained for one pair (number 2), while one pair (number 1(, with 'Anthropologists' (A) and 'Neanderthal Man' (B) as topics, produced an advantage of some 70 msec for condition B. The target word (post-theme verb), which the subjects had to keep in mind presumably by rehearsal during the presentation of the target sentence, happened in this case to be a homophonous item (*passed*). For native speakers, this may have been a distracting factor that overrode the effect of the previous context and had an effect on monitoring performance through phonological coding and the semantic plausibility of the word *past* for both versions. One out of the nine native speaker subjects commented on the homophony. A likely explanation for the small A-B difference in text pair 2 is that the context included a third referent which in fact is fairly strongly in the foreground, especially in version A. This fact may have had an influence on topical expectations.

In the advanced non-native group, the texts function with a roughly similar degree of homogeneity. The deviant text pair is now pair 3, where the mean A latency is some 50 msec longer than the B latency. A relatively small difference is again observed for pair 2.

Fig. 2. Mean word monitor latencies for the six pairs of texts in the three subject groups.



In the INT group the A-B differences are generally small, with mean B latencies smaller than mean A latencies in three out of the six cases. Pair number 6, which was among the easiest lexically, produced a clear A < B difference even in this group, but otherwise the discourse-topical effect observed with most texts in the NS and ADV groups did not appear in the INT group equally clearly.

3.6. Discussion

Above, the effects of topical coherence on the comprehension processes of English native speakers and non-native (Finnish) users of English were observed in a simple two-factor experiment, with reaction times from a visual word monitoring task as the dependent measure. The word monitor task is a subsidiary task method (cf. Levelt 1978) that enables the investigator to focus on a specific point, selected on linguistic grounds, in order to estimate the effects of the linguistic variable on the on-going primary task of comprehension. The rationale for the technique is based on the assumption that spare capacity (cf. Dornic 1980, 1977a, 1977b) in the processing system can be directed to extraneous tasks. Performance in a subsidiary task reflects fluctuations in how available spare capacity is accessed; these fluctuations in turn are a function of the load imposed by the primary task. Another assumption is that the two simultaneous tasks are not processed totally separately by independent components of the processing system. In word monitoring, both the primary and secondary tasks involve linguistic operations. This seems to impose a higher load than using a nonverbal signal as the target, probably owing to greater structural interference (Dornic 1980) between the tasks. (An unpublished comparison by the present writer of phoneme and click monitoring latencies using isolated sentences and subject groups from the same level of proficiency suggests that monitoring for a nonverbal signal is faster by about a factor of two.) Structural interference is a problem if one wants to employ subsidiary techniques in comparisons of the demands imposed by different primary tasks. The subsidiary task cannot be used in any absolute or general sense to estimate the amount of capacity taken up or saved. However, for the present task, this interference would appear to ensure that latencies become sufficiently long and the relative differences in the effects of the independent linguistic variable are highlighted. The monitor technique seems to be able to tap on-going comprehension processes, including the predictive utilisation of contextual information. As it is a simple rather than a choice RT task, and involves rapid and immediate responses, it also contains fewer conscious problem-solving elements than some other RT measures used in comprehension studies.

Distinct quantitative differences in word-monitor times appeared between the three proficiency groups. Non-native readers take considerably longer than native readers to react to verbal stimuli in the task, even when non-native proficiency is sufficiently high to allow seemingly effortless communication with native speakers. This suggests that the speed of the processes involved in the conscious detection of the target word from the stimulus display while simultaneously performing the primary task of general comprehension is dependent on proficiency level. A crucial factor would seem to be the variation in the subjects' ability to utilise regularities in the previous context, including the obvious syntactic predictabilities and the discourse-level dependencies associated with topical coherence. The facilitating effect of syntactic and other expectations on word monitoring was evident in the performance of those native speakers who occasionally responded on contextual grounds before the target word had appeared. (Some of the distractor tasks contained cases that induced strong syntactic expectations.) When the subject's proficiency level is high, the message can be effectively chunked in the sense of Miller (1967), capacity remains available for the subsidiary task, and monitor performance is fast. This interpretation is basically in line with observations of bilinguals, whose performance is markedly slower in the nondominant language in tasks such as acting out instructions, detecting sequences or combinations of numbers presented in the two languages, or matching words with pictures (Dornic 1977b).

The significant effect of context type resulted from the large A-B differences in the native speaker and advanced learner groups. Topical continuity appears to facilitate on-line processing in proficient readers. Having determined the discourse topic on the basis of surface cues, these readers seem to begin the current sentence expecting to encounter the topical referent again in the theme, unless, of course, a coming shift of topic is being signalled. If the sentence is in accordance with this predictive strategy, as in condition A, rapid referential mapping is possible, and spare capacity can be directed to the concurrent subsidiary task. Thus, processing load is relatively low at the locus of the expected discourse-topical referent and immediately following it. This also means that processing capacity can be efficiently used for the integration of the subsequent new information into existing memory structures. However, in condition B texts, the structure of the discourse does not conform to the predictive strategy. As a result, referential mapping across two sentences, with the reinstatement of the antecedent for the target sentence theme, introduces an increase in processing load, which is reflected in the word monitor latencies. It should be noted that the complicating effect of condition B remains below the threshold of consciousness. Subjects were interviewed briefly after the session, and none reported having noticed anything peculiar about any of the passages, though plenty of comments were offered on the comprehension questions and their relation to perceived gist. The latter fact was taken as a sign that instructions had successfully directed subjects' attention to the necessity of reading the materials for meaning.

The observed interaction between proficiency and topic is due to the performance of the intermediate non-native group, whose monitor latencies are not only quantitatively but also qualitatively different from native speaker and advanced non-native results, since there is little difference between the mean response times for condition A and condition B. This suggests that there may be some difference in the discourse processing strategies and capacity allocation principles of more proficient and less proficient non-native readers. With less proficient readers, high-level expectations from preceding context and such macrostructural features as the discourse topic may not always guide processing to the same extent as in the case of skilled foreign-language users.

Along the lines suggested above in section 1.3, a possible explanation may be sought in the limited capacity of the comprehension system. Processing capacity is taken up by those linguistic features of the message that are the most crucial ones for the reader's effort after meaning at that particular point. For less advanced readers, the crucial features may lie in the microstructure, and handling these local features in small units is costly. The result is that little processing may take place on the deeper levels of discourse macrostructure and overall passage meaning. The top-down strategy of using the identified discourse topic predictively as a conceptual peg on which new information can be hung is logically possible only if sufficient processing capacity is available on top of that required by the on-going microanalyses. Thus, global comprehension of foreign-language text comes to depend heavily on the automation of the lower-level processes. This is basically also the finding in L1 word-recognition research (cf. Vellutino 1980: 156): poor native-language readers are less efficient in utilising context to aid comprehension because the deficiencies in the lower-order skills cause short-term memory problems.

In addition to proficiency variations, other factors may also be involved. The quality of the text obviously interacts with proficiency, determining in part what the size of the unit of analysis will be, and how likely it will be that the non-native reader can engage in the processing of macrostructure. Passage 6 in the present materials may have been easy for the majority of subjects in the INT group, with the result that monitor times in condition B were clearly longer than in condition A. The performance of the foreign language reader may also reflect the practices of instruction. If analysis of the code is emphasised, and word-by-word processing thereby encouraged, the skills involved in the construction of macrostructure and the utilisation of global cues in comprehension may develop late. It would also seem that much depends on reading instruction in the native language; if mother-tongue instruction contains practice in these things, an effect should also be observable in foreign-language processing. The material one habitually reads may also be a factor in the strategies employed by adult foreign-language readers though in the present case the groups of subjects are not likely to differ greatly with regard to the need for extensive reading strategies. It was also assumed that general cognitive processing styles (the serialist-holist dichotomy, cf. Entwistle 1980) would be randomly distributed in the groups of subjects.

It is sometimes claimed in somewhat general terms that it is the less fluent non-native readers who are especially dependent on contextual factors in comprehension, since their microprocesses, notably word recognition, are slower and less efficient. This view is an extension into text comprehension of the compensatory view of L1 word recognition (e.g. Stanovich 1980). The essential claim of the compensatory view is that good L1 readers differ from poor readers in the speed of lexical recognition. The ability to utilise context, while present in both types of reader, does not necessarily differentiate between them. The crucial factor is the speed of context- free word recognition, which is so fast in good readers that reliance on contextual cues is seldom necessary. When contextual facilitation of word recognition does take place in these readers, it is through automatic spread-of-activation processes which require no cognitive capacity. Poor readers, on the other hand, need to compensate for their slow context-independent word recognition by the use of higher-order expectations that are slower, require cognitive capacity, and have time to operate precisely because context-independent word recognition is slow. Thus, for the process of lexical recognition, it may be said that while both good and poor readers can utilise context to aid word recognition, the good readers are usually less dependent on context than poor readers.

The extension of this view to comprehension of text and to the present case of the discourse topic would seem to predict that the intermediate readers should be particularly dependent on the variable of context type. The discourse topic, strongly emphasised by a simple title and consolidated through thematic iteration, is a semantic element that could be expected to stand out for the intermediate readers in material that otherwise may remain more or less vague. The prediction would thus be that the intermediate readers should evidence contextual facilitation (condition A) and inhibition (condition B) in their word monitor times at least as clearly as the advanced non-natives and native speaker subjects. A difference would be expected in the speed of word recognition, which should be slower for the intermediate group. Insofar as word monitor times can be used as an index of the speed of lexical recognition, such a difference was obtained. Otherwise, the results appeared to suggest that it is the advanced rather than the intermediate non-native readers who tend to be consistently sensitive to higher-order aspects of the message (the discourse topic), and tend to use it to guide the on-line comprehension of the text.

The compensatory hypothesis thus does not necessarily extend to the integrative and predictive processes of understanding. The distinction between word recognition and text understanding is in fact highlighted by consideration of the consequences of compensatory word recognition for poor readers (cf. Stanovich 1980:64). Using the attention-demanding mechanisms of expectation to aid word recognition (i.e., having to utilise clues from, say, syntax to make up for the fact that the word cannot automatically be recognised as a unit) reduces the capacity that is available for the higher-order processes of comprehension, whereby a meaning representation is built for the sentences, and, on the level of macrostructure, for entire texts. Much of the processing capacity of the poorer readers (less proficient foreign-language readers) thus goes into various microprocesses, which may impede the handling and predictive utilisation of such macrofeatures as the discourse topic, gist, the writer's attitude, and nonliteral meaning.

The experiment described above attempted to tap some of the higher-order processes in comprehension at a specific point during processing. What was being measured during the target sentence was the fluctuation in processing load at the point when the thematically interesting criterial word (*Fry* in Table 1) has been recognised and the reader is processing the next word (the target verb) while simultaneously performing the conscious vigilance task of word monitoring. The monitor latency to the target verb can be taken to reflect load from processes whereby the reader is attempting to relate the criterial word just recognised to the information derived from the preceding discourse. For advanced non-native readers, whose processing capacity is not heavily taxed by microprocesses, the facilitatory and inhibitory effects of topical structure on the integration processes are clear. For less advanced foreign language readers, whose comprehension of the topic in the preceding context and its top-down utilisation is probably less efficient, topical discontinuity in the preceding context does not have a similar consistent effect.

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FOREIGN LANGUAGE VOCABULARY LEARNING – A CRITERION OF LEARNING ACHIEVEMENT

In this paper I am not going to present any data or original research, but simply direct your attention to a problem that I came across while working on my thesis (af Trampe 1982). The thesis is partly about foreign language vocabulary learning. It sets out from the observation that we seem to acquire some foreign words without much effort, whereas other words require a lot of repetition and/or dictionary look-ups before they are reliably stored in long-term memory. Some words are obviously less difficult to learn than others and it seems worthwhile to try and find out what makes a word difficult to learn. If we want to do this, however, at least two notions must be made clear. First of all we must specify what we mean by saying that a word has been *learned*. Secondly, the notion of *difficulty* should be analyzed and the use of the term be made explicit in each particular case.

I shall take it as evident that the *criterion of learning achievement* varies depending on such factors as stage of proficiency in the foreign language, the different goals of different kinds of language courses, and judgements on the importance of different topics or semantic fields. I will discuss a *blueprint* for learning criteria, then, rather than *a* learning criterion.

The specification of a *criterion of learning achievement* faces us with at least two decision complexes. Firstly we must look at the word as a lexical item in the linguistic sense, and state the necessary conditions as to the lexical information to be internalized by the learner. In other words, what should the learner know about the word for us to say that it has been learned? Briefly, (see e.g. Anward 1976 and Stroud 1979 for detail), lexical competence embraces knowledge of the phonologic/graphemic, morphologic, syntactic and semantic characteristics of a lexical item. The semantic characteristics include a specification of the basic meaning of the item and its semantic relations to other items. The same meaning may also have several related meanings or nuances of meaning, relating to such factors as style, verbal and situational context etc. To this we can add the notion of intentional meaning and say that an item can be understood at different levels of intention.

Secondly, we must decide which *processes* are to be criterial. Following Clark & Clark (1977), I use the word "processes" to refer to the production and comprehension processes, but in addition to this a distinction between written and spoken language must of course be introduced. Note, furthermore, that other processes (e.g. translation) are sometimes – perhaps inadvertently – taken to be criterial in tests, experiments and teaching situations.

The decisions to be reached about the different processes and about lexical information are twofold. First, we must select the number of processes and the amount of lexical information to be included in the criterion. Then we must decide on the degree to which the resulting selection of specifications shall be mastered before the criterion is satisfied. In practice, these decisions will be based on the experience of the teacher or researcher, but there will also be an element of personal belief and personal priorities in the decision-making.

As to the selection of processes, there would probably be some agreement – today – whether to include or exclude different skills based on the spoken-written distinction. Regarding the comprehension and production processes, everyone will agree on comprehension as a necessary condition of learning achievement. The question is to what extent *production* should be a necessary condition as well. In the model of foreign language acquisition proposed by Krashen (1981), what has been acquired is discussed solely in terms of production skills. In studies based on the spontaneous or elicited speech of informants (e.g. Kotsinas 1982) it seems natural to consider learning achievement in these terms only.

From an epistemological point of view, however, I cannot see how we could maintain that someone who understands a word, but does not use it in production, has not learned that word. Besides, it is usually agreed that the vocabulary of native speakers contains a large amount of words that are comprehended though not actively used. It also seems to be the case that children can understand more than they can express (Clark & Clark 1977: 487, Benedict 1979). One would expect the same principles to apply to foreign language learners. Add to this the limitations of elicitation procedures, and the fact that production is dependent on factors other than learning (e.g. "intention to communicate"), and the conclusion must be that production cannot be a necessary condition of learning achievement for all words and all learners.

Now, the goal of most language courses is both production and comprehension. Even so, we must use the production condition with discrimination. If we discuss the principles of foreign language learning in terms of production only, there is an obvious risk of drawing the wrong conclusions about the learning process and about teaching methods. With regard to the latter, note that some researchers (e.g. Gary 1978, Winitz & Reeds 1975) claim that beginners' foreign language learning may actually benefit from the exclusion of production skills.

The conclusion above must be held in mind when we decide on the degree of processing mastery – referred to here as the degree of *fluency*. The latter term is usually taken to mean speaking fluency, but, as Leeson (1975) points out, fluency is determined by both comprehension and production factors, and we can distinguish between *encoding* fluency and *decoding* fluency. The degree of fluency can be stated rather grossly as encoding rate and decoding rate.

Let us now turn to the selection of lexical information. One basic problem is to choose criteria appropriate to the stage of L2 learning in question. In L1, the acquisition of vocabulary is a life-long process in which we continuously add new words and new meaning to those we already possess. Whereas there has been some research done on the first stages of this process, very little is known about the beginning stages in foreign language learning. Usually, the grammatical and semantic categories of the linguists' descriptions of adult L1 are taken for granted, but, even though they seem appropriate for adult L1 vocabulary development, they might not be adequate for the early stages in second and foreign language learning. Hakuta (1981) and McLaughlin (1981) discuss this problem. Notwithstanding this possible inadequacy, and trying to put it rather non-committally, we must make a choice for each lexical item – semantically – as to what meaning(s), semantic relations and intentional level(s), and – grammatically – as to what form(s) and context(s) to include. The primary question is to what extent grammatical information should be included. In the minimal case only the lexical meaning of the item is taken into account. Note, however, that even in this case some – albeit diffuse – knowledge of grammar is necessary, as the learner must be able to identify the word regardless of morphological shape. At the other end of the scale both the lexical and the grammatical meaning is understood/expressed.

For the phonological level we can think of the choice as being one of level or levels of specification, where the minimal requirement is that perceptual equivalence obtains (to the learner). In a teleological model of the speaker suggested by Lindblom (forthcoming), perceptual equivalence is the fundamental characteristic of different realizations of a word (cf. de Saussure's statement "Dans la langue il n'y a que des différences"). The native speaker, however, will be able to operate on more specified levels as well, and he can for instance choose to speak more or less distinctly depending on his judgement of the listener's capacity, the signal-to-noise ratio etc. The beginning language learner will judge a number of native L2 speakers' forms as perceptually equivalent, and he will tolerate deviations from the native norm in his own production provided perceptual equivalence is upheld to him. He will, however, have a low level of tolerance for noise and reductions, as he cannot use phonetic redundancy to the same extent as the native speaker/listener. As he becomes more proficient this will change and his own L2 production will be more approximated to the native norm – i.e. he will be able to operate on more specified levels, too.

As an example of a minimal criterion on the phonetic/graphemic level I will take the criterion used when scoring responses in my own study of letter learning and word decoding in Russian (af Trampe 1982). In that study I was only interested in whether a Subject had learned to identify a Russian word correctly or not. The data consisted of tape-recorded readings of a number of Russian words. In each case a response was considered correct if the reading would have enabled the Subject to look the word up in a dictionary without having to resort to purely visual matching. This meant that the scoring procedure had to be related to the responses of each Subject *per se* – e.g. if a Subject consistently pronounced the Russian letter ж as /dʒ/ and no other letter was given this pronunciation, the letter was considered correctly identified.

The degree to which lexical information is to be learned can be referred to as the degree of *accuracy*. It should be stated for each level of lexical information in each processing mode, and could, it is suggested, be expressed as the percentage of correct responses, where correctness is determined according to the chosen criterion; e.g. "% realizations of word x pronounced at the level of specification y". The degree of accuracy can, of course, be set differently for different levels of lexical information, and there is probably an imbalance between levels to the effect that one is less inclined to accept semantic errors than phonologic and morphologic/syntactic ones.

In theory then, a criterion of learning achievement should be set for each word – or group of words. In practice, this is seldom done, or done in a very general way only (i.e. for all words or with rough distinctions such as the one between active and passive vocabulary). Unless the criterion used in experiments etc. is not obvious, I think it should be specified and stated in research reports. If not, the results of different studies will be extremely hard to compare. Given satisfactory criteria, there will of course still be problems – both in research and teaching practice – with respect to elicitation procedures, comprehension testing, linguistic description, the judgement of correctness and the measurement of fluency.

In conclusion, let me return to the second notion mentioned in the beginning of this paper – that of difficulty. I find difficulty a pivotal concept in research on foreign language learning. It seems to me, however, that this concept has been treated rather simplistically in the literature, and that – in the future – we should concentrate on the elaboration of this concept. In such endeavours, explicit learning achievement criteria will certainly be helpful.

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SELECTION OF LEXICAL INFORMATION		PROCESS			
		PRODUCTION		COMPREHENSION	
		Degree of		Degree of	
Level	Choice of	ACCURACY	FLUENCY	ACCURACY	FLUENCY
PHONOLOGIC	Level of Specification a) level of approximation b) level of tolerance	% Accurately Pronounced	Encoding rate	% Recognized Phonological Words	Decoding rate
MORPHOLOGIC AND SYNTACTIC	Forms and Grammatical Contexts	% Grammatically Correct		% Lexical items and/or Lexical items cum grammatical features Recognized	
SEMANTIC	Meanings Relations Intensional Level(s)	% Intended meaning correctly expressed (lexical and/or lexical + grammatical choice).		% Lexical meanings and/or Lexical + grammatical meanings Comprehended	

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